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**“The Influence of Logistics Outsourcing on
Supply Chain Management”**

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Abstract

This research work as part of a Master thesis aims to analyse the potential influence of outsourced logistics function on supply chain management from a strategic perspective. To carry out this thesis work a survey is designed to collect all the necessary data, in order to investigate the influence of outsourced logistics activities. The survey targets professionals in the area of logistics from Sweden and France, a response rate of 10% and 36% has been respectively obtained. A statistical analysis has been realized by using the ANOVA method which allows us to evaluate statistically significant results. Hence the analysis carried out answers the research questions formulated.

Our findings have shown a similar trend in Sweden and France on the outsourced logistics activities; mainly transportation and custom brokerage respectively at 80% and 60% are outsourced. According to the responses obtained from the survey, these activities tend to influence supply chain management and its strategy. As for example in Sweden, outsourcing transportation tends to initiate a need of organizational collaboration for an effective supply chain. The following functions such as warehousing, inventory control, order processing, product assembly, reverse logistics and information technology are less outsourced. However we noticed an increase in their use and importance on supply chain management. This can be explained by the recent and significant developments in the field of Information Technology, as well as the growing importance of sustainability for firms. For example for Swedish organizations, outsourcing order processing seems to lead to a focus on responsive supply chain, to use of postponement strategies and an importance in collaboration across the supply chain. Results are different for companies in France as the main influence of outsourcing logistics activities is more on seen the supply chain as a whole with a great importance in partnership and an interest in standardization of method and re-engineering the supply chain as well as in a sustainable way.

For further research work, it will be immensely appealing to develop a framework that defines strategies and managerial issues within the supply chain, considering outsourced logistics functions. Moreover, this research work can be carried out by using different methodologies such as the use of interviews.

Key words

Outsourcing, Production sourcing, Supply Chain Management & Strategy, Information technology, Partnership, Sweden, France.

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Logistics is a particularly interesting field that can be researched immensely, and as our main focus is within this field of study has been outsourcing logistics within the supply chain management. Working in this growing trend has been highly challenging and rewarding with respect to the knowledge gained. This research work has helped us reach the competitive levels required as a Master graduate in the field of production with the importance of logistic as core strength. Realizing this research work has been particularly challenging for us, and we learnt a lot about the research world and its code.

We would like to thank all the professionals from the field of logistics who actively participated in our survey. It has been very stimulating for us to get a remarkably clear picture and gain in depth knowledge from professionals in this domain.

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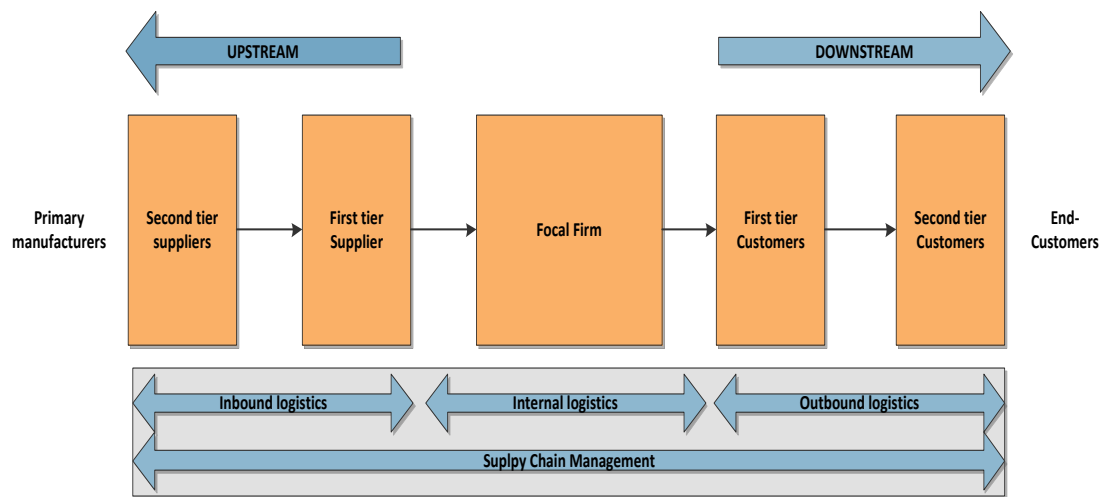
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I Introduction

In this chapter, the readers are introduced to the background of this thesis and brief introduction in to the specific research area of supply chain management and outsourced logistics functions. The aim of this thesis, research questions formulated along with delimitations are also presented.

I.1 Background

Supply chain management (SCM) can be defined as “a set of approaches utilized to efficiently integrate and coordinate the materials, information and financial flows across the supply chain” (Harrison & Van Hoek, 2011) (Figure 1). A supply chain (SC) can be described as “a network of autonomous organizations which typically includes suppliers, manufactures, wholesalers, and retailers who are involved in the processes that ensure the right products of the right quality are delivered in the right quantities, to the right locations, at the right time, in a cost-effective way” (Gibson et al., 2005; Mentzer et al., 2001). The processes as described above may vary between different types of organizations but typically include activities like sourcing, manufacturing, and distribution (Chopra & Meindl, 2010). The primary focus of SCM is to fulfil customer needs, improve efficiency along the SC and to add value to the product (Stock & Boyer, 2009). To reach this goal, companies apply different strategies and different management approaches on the materials and information flows across the SC.



Source: Harrison & Van Hoek, 2011

Figure 1- Supply Chain Management

SCM is of fundamental significance to every organization. It is directly based on three main objectives: quality, time, and cost. Quality is an important objective because it is visible to the customer and benefits the loyalty of the customer (Harrison & Van Hoek, 2011). Time factor is also described as responsiveness, which represents how fast the product can pass through the SC to reach the customer. Cost can give an advantage on the market when a low prices or high margin is reached. SCM is conducted at three different management levels: design (or strategic), which covers long-term decisions on how to structure the chain; planning (or tactical), which covers medium-term decisions on how to plan the chain; and operations (or operational), which covers short-term decisions on how to operate the chain (Chopra and Meindl, 2010). Strategic level involves top management and decisions based on a long-term perspective. Tactical level comprises of demand, inventory and master supply planning. Operational level of SCM can be observed as execution work carried out on a daily basis (Bose & Pal, 2005). This implies that the coordination of the materials, information and financial flows occur within and between companies at different levels.

SCM has become progressively more complex due to several changes in the market, such as increased competition, increased demand variability, increased product variety, increased customization, and shortening product life cycles (Christopher et al., 2004). These developments, due in part to globalization, provide additional management challenges and new practices in which supply chains are designed and managed (Christopher and Towill, 2006). To remain competitive in this global environment, companies also have shifted their focus from concentrating on all business functions to only concentrating on those functions that they regard as their core business. A trend of outsourcing noncore activities to specialists in respective areas is observed (Sahay & Mohan, 2006). To gain possible competitive advantage and customer satisfaction, companies have now diverted their attention to carry out outsourcing (Bolumole, 2007).

Outsourcing can be seen in many different ways. However, in general, outsourcing of logistics also referred to as third party logistics (3PL), can be described as *“the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed by the third party can encompass the entire logistics process or selected activities within that process”* (Lieb, 1992). The research in outsourcing has shown the activities outsourced (Power et al., 2007), the reasons behind logistics outsourcing (Jäger et al., 2009) and the benefits of logistics outsourcing (Chopra & Meindl, 2010). In fact, an increase in outsourcing logistics leads to more SC actors. And other changes like in collaboration decision between long or short term partnership, between manufacturers and suppliers. A connection between these two areas of logistics and SCM can be thought.

1.2 Problem formulation

It may be argued that the SC and its management is of highest importance in most industries .Due to the constant rise in product variety and shorter life cycles, it has been argued that there is no best fit of SC design because each product requires a specific SC strategy to achieve a competitive edge (Chopra & Meindl, 2010). Different types of research have been carried out on SCM and especially on the strategic level. There are a lot of existing theoretical frameworks which talk about how to make decisions according to SC strategy such as lean and agile or leagile SC (Hilletoft, 2008). However as argued previously, there is no best fit SC strategy and there seems to be a lack of research on how decisions are affected by other factors. We might wonder if the fact of outsourcing logistics activities may affects the SC and be a factors influencing decision to design the SC and define its strategy.

It may be argued that there is an increasing trend on outsourcing logistics function or activities, e.g. transposition and warehousing. As mention by Chopra and Meindl (2010) third-party logistics and outsourcing can have a significant influence on SC outcome. According to Solakivi et al (2011) there are lots of activities especially concerning transportation which are outsourced, but these activities do not have a direct influence on the performance of companies. Moreover, many research papers have explored the concept of outsourcing and company performance as explained by Solakivi (2011) and they imply that outsourcing does not have a direct influence on company's performance. Also, the study carried out by Juntunen et al (2010) indicates that there are trade-offs observed in the outsourcing relationship activities. The study also implies the significance of 3PL providers and how cost plays a crucial role for the overall customer satisfaction and service. Through outsourcing the companies can have benefits like cost-reduction, quality improvement, increased focus on core functions, increased market coverage, improved customer service, reduction of SC complexity, improved management (Hilletoft, 2010). However, the influence of outsourcing on SCM remains uncertain.

It may be argued that not much is known with regard to how outsourced logistics functions or activities influence company strategies and direction in SCM. Bolumole (2007) research mentions “*a lack of established theoretical framework for evaluating organizations decisions and influence on logistics*” this shows there is a lack of literature to see if there any link between logistics outsourcing on SCM. Different research has also indicated the importance in analysing organizations outsourcing strategies as well the role of logistics outsourcing on SC strategy and management (Bolumole, 2007; Hilletoft, 2010). A recent research by Hilletoft and Hilmola (2010) has specified that “warehousing, IT, and customs brokerage outsourcing could have an influence on some managerial and strategic aspects of supply chains”. It’s assumed that by knowing this influence, this will provide the necessary knowledge to develop a framework to manage the strategies on outsourcing and SCM. As an attempt to fill this gap, this thesis work will be carried out to prove this potential influence of outsourcing decision on the SCM decision. By improving the knowledge on this probable influence it can lead to a better decision making at the strategic level.

1.3 Purpose and Research question

In the problem formulation section, it is argued that the SC and its management is of highest importance in most industries. In addition, it is shown that there is an increasing trend on outsourcing logistics function or activities, e.g. transposition and warehousing. Finally, it is argued that not much is known with regard to how outsourced logistics functions or activities influence company strategies and direction in SCM. Hence the overall purpose of this thesis is to:

Investigate how logistics outsourcing may influence supply chain management from a strategic perspective.

The strategic part of SCM involves numerous of aspects and the objective is not to target everything. Instead this thesis focuses on four major areas, namely: management orientation, utilized strategies, information technology and partnerships. The reason why these particular areas have been chosen is that they together constitute the essence of SCM (Chopra & Meindl, 2010).

The first research question aims to investigate the influence on the management orientation. Many different decisions made by managerial teams such as (in-house) or buy (outsource), defining the objective on the SC (efficient or responsive), defining the importance of customer satisfaction, etc make this aspect essential in SCM. This part will be explored in this first research question.

RQ 1: How may logistics outsourcing influence **Management Orientation** in Supply Chain Management?

The second research question is on the strategies utilized by companies, for example using strategies such as continuous-replenishment, quick response or just-in-time, postponement, sustainable SC etc. As mentioned previously there is no best fit strategy but it needs to be adapted to any changes in the SC. That is why strategy within SCM is also a crucial part that we decide to investigate in the research question2.

RQ 2: How may logistics outsourcing influence **Utilized Strategies** in Supply Chain Management?

The third research question aims to consider the role of Information Technology in the SC to analyse if outsourcing options influence decisions in IT. As mentioned by Wu et al (2006), increasingly number of companies relies on information technology to improve their process on SC. With the progress in information system as MRP or ERP, industry experienced a real change in the way work is done, data are manage, store and share easier than before. With a constant growing attention to information technology from industry and research world, it is natural to consider Information technology for the third research question which might have an influence on SCM as mention by Hilletoft (2010).

RQ 3: How may logistics outsourcing influence **Utilized Information Technology** in Supply Chain Management?

Finally, last research question aims at examining the influence of decisions made to outsource certain logistics on partnerships between different actors of SC. In fact, a need in collaboration between actors along the SC is becoming crucial for success. And by outsourcing logistics activities to third party logistics, we can wonder how this collaboration evolves and how they might influence SCM.

RQ 4: How may logistics outsourcing influence **Partnerships (Relationships)** in Supply Chain Management?

These questions have been examined through different literature review in order to keep a focus on what exactly is the influence of outsourcing decisions and will be analysed in the results chapter.

1.4 Scope & Delimitation

The scope of this research is illustrated in Figure 2. The aim is to investigate how logistics outsourcing may influence the strategic part of SCM. As already explained the strategic part of SCM involves numerous of aspects and the objective is not to target everything. Instead this thesis focuses on four major areas: management orientation, utilized strategies, information technology and partnerships. This is justified by the fact that the most critical decisions are taken at the strategic level (Bose and Pal, 2005) Numerous options also exists with regard to logistics outsourcing and the ones considered in this thesis are: Warehousing, Transportation, Information technology, Custom brokerage, Inventory control, Order processing, Product assembly and Reverse logistics. The limiting of outsourcing options is necessary to increase the relevance of the research and reduce confusion during analysis. These areas will be further described in the theoretical framework

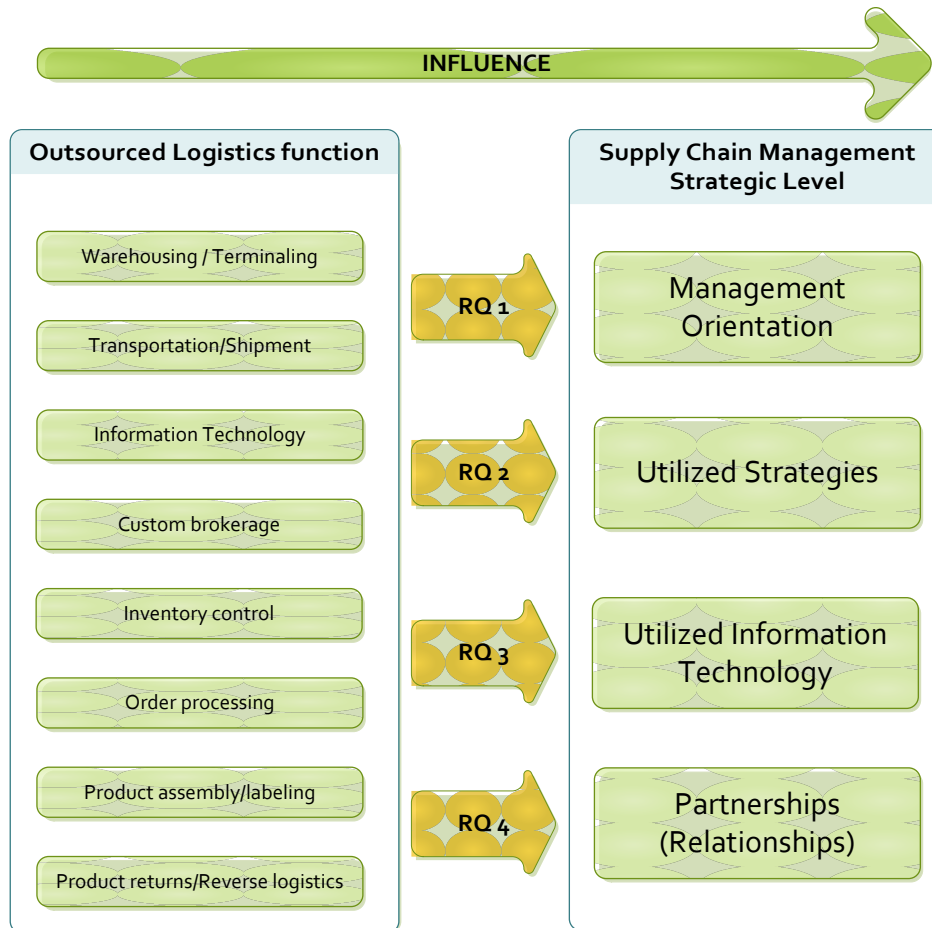
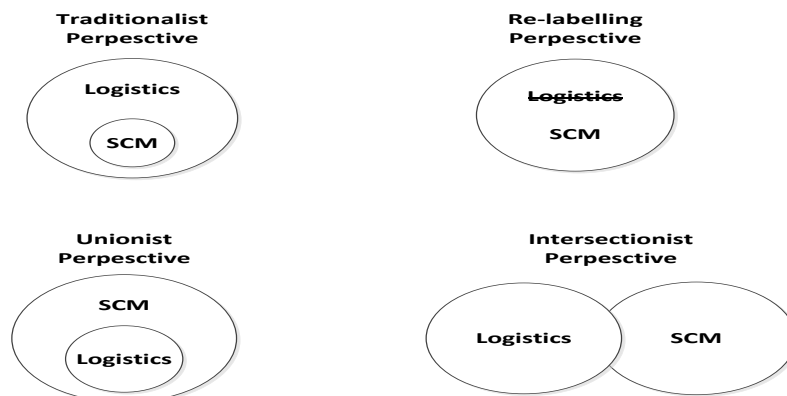


Figure 2 - Scope of the research

Ambiguity between the terminologies of logistics and SCM persist in the research area. It is important to mention the four different perspectives of SCM and logistics which oppose to each other, as defined by Larson and Halldorsson (2004). Figure 3 represents the four different perspectives as Traditionalist, Re-labelling, Unionist and Intersectionist.



Source: Larson & Halldorsson, 2004

Figure 3 -The Four perspectives on logistics versus supply chain management
(Source: Larson & Halldorsson, 2004)

In this thesis, the unionist perspective that integrates logistics as functions managed by the SCM concepts will be employed. Based on Figure 2 above we can observe that there are different perspectives in viewing these domains of logistics and SCM. As the unionist perspective provides a better understanding both in the academic and industrial side, we have employed this view in this thesis. Moreover, this is the most common view use in the research area as mentioned by Larson and Halldorsson (2004). This choice has been made as in our opinion SCM represents all the different activities cover along the SC such as managerial decision, strategies to utilized, use of Information Technology and partnership between actors of the SC. For this reason in our point of view, SCM encompasses logistic activities.

1.5 Outline

This report is based on chapters which are structured in a methodical manner which guides the reader through the literature used, and the research carried out.

Chapter 1 – Introduction: in this chapter basic theory which is used is highlighted, terminologies are provided. Aim and research questions formulated are described along with scope and delimitation.

Chapter 2 – Theoretical Framework: in this chapter the detailed theory used for this thesis is explained, this introduces readers to certain specific theories used in research for this thesis.

Chapter 3 – Methodology: this chapter provides information on the methods and tools used in this thesis.

Chapter 4 – Results: in this chapter we have presented the results obtained from the survey conducted and also analysis carried out. The analysis is categorised based on research questions formulated.

Chapter 5 – Discussion and conclusion: in this chapter we have discussed the analysis, its methodology and findings. Finally, we have provided conclusions based on results obtained.

Chapter 6 – References: in this chapter, we have listed all the references and literature used in this thesis. We have followed Harvard methodology of referencing system.

Chapter 7 - Appendix: in this chapter we have provided the literature which we have referred in the thesis.

2 Theoretical Framework

This section highlights the theories that are used to conduct this thesis and describe the theoretical framework developed. The framework enables the reader to understand how the survey was structured and developed.

2.1 Components in the Framework

The theoretical framework enables the reader to make a logical relationship between various elements and variables used in this thesis. To guide the research by determining the statistical relationship that will be explored, a theoretical framework has been developed. Based on a collection of interrelated concepts including SCM (Stadtler, 2004), Supply strategy (Hilletoft, 2008), Logistics outsourcing (Hilletoft & Hilmola, 2010) and company performance (Solakivi et al, 2011). The theoretical framework developed for this thesis will enable us to limit ourselves to certain theoretical concepts.

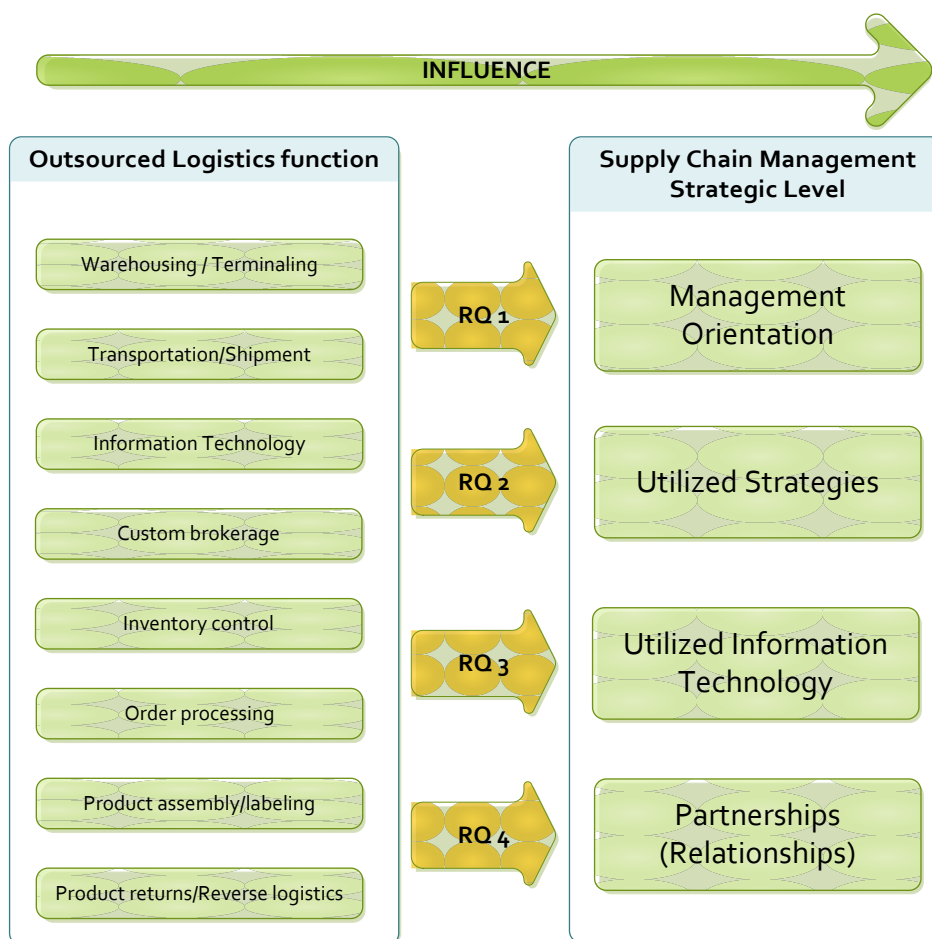


Figure 4- Framework to analyse the potential influence of outsourced logistics function on supply chain management aspects

Figure 4 shows the scope as well as the theoretical framework of this thesis. As it can be noted the main areas that will be targeted in this chapter are SCM and logistics outsourcing. The section concerning SCM will focus on the strategic part of SCM including aspects related to management orientation, utilized strategies, information technology and partnerships. The section concerning logistics

outsourcing will focus on common functions and activities to outsource, reasons for logistics outsourcing, and benefits of logistics outsourcing. The framework is suggesting an influence of certain logistics outsourced activities on strategic part of SCM. The research questions (RQ1, RQ2, RQ3 and RQ4) are developed to observe the influence on the four areas of strategic SCM. This has enabled us to develop and design the surveys; which in turn have generated the data for analysis.

2.2 Logistics outsourcing

In general terms, Third party logistics (3PL) is using a transportation company to carry out different distribution and transportation activities in the SC. If transportation can be seen as a product or a service which can be purchased and has no significant importance to business of the organization, then there is a strong objective to use 3PL to carry the commodities. 3PL providers are generally specialized to carry out the various processes and can provide higher economic benefits than what small and medium scaled companies can achieve, this also indicates to a certain extent that company lacks in-house expertise in this area (Sadler, 2007). There are a lot of definitions available for 3PL, describing in different contexts, but for this thesis as we are conducting research in Europe, we believe a definition relevant to this geographical area should be used, according to Andersson *et al.* (2003):

“Third-party logistics (3PL) are activities carried out by an external company on behalf of a shipper and consisting of at least provision of management of multiple logistics services. These activities are offered in an integrated way, not on a stand-alone basis. The co-operation between the shipper and the external company is an intended continuous relationship”.

According to the literature based by Chopra and Meindl (2010) the 3PL companies conventionally provide services like transportation, warehousing and Information technology in SC process. Due to the influence of globalization and competition to provide cost effective solutions, now 3PL providers are focusing on different functions in SC. Based on various service categories provided by 3PL providers the Table 1 below shows that there are certain basic services offered, and certain specific value added services. In transportation, basic service offered are inbound and outbound shipment by different means, and value added services such as tracking, conversion, and dispatch and contract management. In warehousing basic services provided such as storage and facilities management, value added services such as inventory control, labelling etc.

Table 1 – Type of services provided by 3PL (Source: Chopra and Meindl, 2010)

Service category	Basic service	Specific value added services
Transportation	Inbound/outbound shipment	Tendering, tracking, mode conversion, contract management
Warehousing	Storage, facilities management	Pool distribution, packing, inventory control, labelling and delivery of catalogue orders
Information technology	Provide and maintain computer systems	Transportation management, warehouse management, bill payment system, tracking and tracing
Reverse logistics	Handle reverse logistics	Recycling, customer returns, container management
Other 3PL services		Brokering, purchase order management, order taking, loss and damage claims, consulting
International		Customs brokering, port services, consolidation
Special skills/handling		Hazardous materials, temperature controlled packing, food grade facilities, equipment's, bulk

In information technology basic services such as providing advanced information/computer systems, special services such as transportation and warehouse management etc. In reverse logistics, basic services such as handling of reverse flow of goods, special services such as recycling, container management etc. Other services offered include order management, brokering, customs brokering and hazardous material handling etc (Chopra and Meindl, 2010).

2.2.1 Reasons for logistics outsourcing

The increasing trend in international business has exponentially increased growth in international trade. This trend has considerably increased in the last decade; hence this increase is a primary reason for evolution in the area of logistics and SCM. As one of the main goals of logistics is to smoothen the process of trade, ensuring the economic stability of the companies and in turn economic growth of a country is facilitated. Hence we can observe the concept of globalization emerging on a higher note (Mangan et al, 2012).

The growth in international trade and increased global competition has influenced manufacturing and service sectors to adapt globalization trends few of them have been listed below:

- *Global sourcing*

- *Global competition*
- *Rapid technological change*
- *Product customization, etc.*

Due to the trends listed above we can say that manufacturing and service sectors have been making a lot of changes in organizations, giving a lot of importance for partners in SC and the relationship with organizations (Mangan et al, 2012).

According to Mangan et al (2012), Outsourcing can be defined as “*the transfer to a third party of management and delivery of a process previously performed by the company itself*”

There are several reasons for which companies decide to outsource, but the following four reasons encompass several other reasons for the company’s motive to outsource, they are:

- *Cost*
- *Flexibility*
- *Core competencies*
- *Technology*

It is also essential to understand that outsourcing decision by a company cannot have positive and immediate results, certain reasons according to the literature as mentioned by Pandit (2005) are:

- *Late delivery*: this is one of the common reasons which cause failures in outsourcing, as companies cannot meet customer demands due to late deliveries. This leads to cost incursion for faster delivery or to maintain safety stock for such reasons.
- *Quality and reliability*: services offered , and product quality issues is generally observed over a period of time, this is a mutual problem with the service providers and also manufactures as they are constantly governed by customer quality. Trade-off is observed between cost and quality.
- *Flexibility and cost*: the changing circumstances between the parties can sometimes lead to being unresponsive, due to the factors for not being flexible or to save certain costs incurred.

2.2.2 Benefits for logistics outsourcing

There are various literatures which suggests different reasons based on different research carried out, based on the focus of our research we have listed few benefits of logistics outsourcing based on literature from Hilletofth (2010), Razzaque and Sheng (1998):

- Superior customer service
- Increased mobility and flexibility

- Enhanced quality and reduced cost
- Reduction in SC complexity
- Availability of the latest technology and skill set
- Increased focus on core functionalities and better management orientation

In this section of theory, we will be describing the various outsourced logistics functions, these functions are usually services offered by 3PL providers. These eight functions, which have been listed below are carefully chosen for this research, there exists even other logistics functions, based on the literature from Hilletofth (2010), Mangan *et al* (2012), Chopra and Meindl (2010) we are limiting the options to certain activities which might have potential influence on SCM this has been based on the Table 2 below.

Table 2 – Significance of outsourced logistics functions (Source: Hilletofth (2010), Mangan *et al* (2012), Chopra and Meindl (2010))

Logistics functions	Significant influence on SCM	Non-Significant influence on SCM	Potential influence on SCM
Reverse logistics			X
Custom brokerage	X		
Distribution		X	
Transportation			X
Warehousing	X		
Fleet management		X	
Inventory management			X
Procurement		X	
Order entry, processing			X
Information technology	X		
Product assembly/packing			X

As mentioned by Hilletofth (2010) activities such as IT, warehousing and custom brokerage may have a connection on how SCM and its strategy are set. More over the potential influence of other functions as show above in the table 2 might have an influence on SCM. We will be describing the selected functions, according to their potential effect on SCM which have been listed below:

2.2.3 Common functions to outsource

2.2.3.1 Warehousing/Terminaling

The purpose of a warehouse is to provide a secure and reasonable place for products to be stored. There is warehousing at all the stages of SC. For example, supplier needs it for raw material storage, Manufacture needs it for finished goods, distributor needs warehousing for retailing purposes before the final product reaches customer. Outsourcing of warehousing is usually carried out to optimize the SC. This is usually considered as a non-value added activity in the manufacturing process hence a need for an effective solution arises for the companies, this function is also connected with other logistics functions such as warehouse management, inventory control etc. Terminaling is also similar as warehousing, also used as a different terminology.

2.2.3.2 Transportation/Shipment

Transportation or shipment is an integral part of logistics and SC process. It's also treated as a service which can be easily available to suppliers or distributors when needed. Transportation is also considered as a non-value added activity, but its importance in providing an on time and cost effective solution is necessity. There are five modes of transportation they are air, road, water, rail and pipeline. These different modes are dependent on the type of goods transported, distance of transportation and most importantly weight of goods. Transportation/shipment is also connected to different functions which have been described in this section; depending on company's core competency and need this activity is outsourced.

2.2.3.3 Order Processing

This function deals with various business procedures like from receipt of order until service and product is delivered to the customer. Order processing fundamentally involves all information needed from how much products are needed from when it is needed. It provides information to the manufacturer on how much quantity of raw material is needed and when the final delivery is to be made. Order processing is different between different actors in SC process, but same in functionality. This process is usually carried out with the support of information systems.

2.2.3.4 Inventory Control

Inventory control is an integral function of inventory or warehouse management. This deals with providing and controlling information with regard to goods in the inventory. This information is usually connected to requirements obtained from customer. As most of manufacturing companies produce goods based on demand and market requirement, this acts as a crucial step in gathering information as this is connected to retailers. This can be a part of warehousing or information technology or provided as a separate service by 3PL provider.

2.2.3.5 Custom Brokerage

Custom brokerage basically deals with information and documentation preparation when performing import or export of goods. The transportation of material from country to another demands a lot of proper documented work, hence 3PL providers when they provide services of transportation they also offer custom brokerage to smoothen the process. This demands skills and expertise in specific areas, based on the geographical location of transportation. This is carried out with the help of information systems.

2.2.3.6 Product assembly/Packing/labelling

Specialized companies which produce specific products, often lack manpower or resources need to perform activities like product assembly, packing and labelling of products. Often 3PL providers take on the responsibility of performing these activities as it is easier to consolidate all the required information and ship it to the customers. This process connects the information flow from 3PL providers, manufacturer and customer. Packing and labelling is usually performed as a single activity and also for environment sustainability.

2.2.3.7 Product returns/Reverse logistics

The movement of products and goods in the SC in the reverse direction is known as reverse logistics. There are various reasons for which this can be considered, such as recycling purposes, faulty products and if there is no use for the product. It involves a lot of physical activities which are performed at warehouses or distribution centres. They perform activities like return of products, remanufacturing of certain components of product and recycling and disposal of products. They support and bring value to products which are more than its scrape value; hence this is a major service offered by 3PL providers.

2.2.3.8 Information Technology

Information technology on broad terms involves usage of computer systems both hardware and software to perform desired activity. The main role of information technology in logistics is providing the right information to the right person at the right time. They can also be called as logistics information systems, it contains three levels of information they are data collection of facts, valid information and level of knowledge. The main functions of this logistic information system are transaction accomplishment, product and order status information, summarized information for management, data for other SC links and finally performance measurement. This can be provided as a major service by different IT companies which work in collaboration with major manufacturing and 3PL providers. Information technology in logistics also connects other activities described above as information flow is the key factor for performing logistics activities.

2.3 Strategic Supply Chain Management

This section is explanative in order to define the concept of “Supply Chain Management” including the management orientation, the strategy developed and the use of new technology like “Information Technology” and collaborative aspect along the SC; as well as descriptive on the past and recent research on this domain.

The primary focus of managing the SC is to fulfil the end-customer needs, create efficiency along the SC and add value to the product (Stock & Boyer, 2009). To reach this, companies apply different strategies and apply different type of management on the material and information flow across the SC. From the beginning of the chain with supplier of raw materials to the end-customer who buy these products, these flows have to be coordinated between all the partners. Many different strategies to reach the satisfaction of the customer according to the type of product exist. For example, the focus can be on reaching the lowest cost possible or the highest availability of product. To resume this management aspect within the SC, the terminology “Supply Chain Management” can be used and defined as *“a set of approaches utilized to efficiently integrate and coordinate the materials, information and financial flows across the supply chain, so that merchandise is supplied, produced and distributed at the right quantities, to the right locations, and at the right times, in the most cost-efficient way, while satisfying customer requirements”* (Hilletoft, 2008).

Furthermore, Chopra and Meindl (2010) mention three levels of SCM as design, planning, and operation, and the decisions made in each of them play a significant role in the success or failure of an organization. These three levels can be also called as Strategic, Tactical and Operational levels (Bose & Pal, 2005). Strategic level involves top management and decisions are based on a long-term. Tactical level comprises of demand, inventory and master supply planning. Whereas operational level of SCM can be observed as execution work carried out on a daily basis (Bose & Pal, 2005). This research as mention previously focuses on the strategic level of SCM. In addition, the “strategic” aspect represent the long-term thinking, whereas the “managerial” aspect cover the short and medium-term planning and control over the SC (Harrison & Van Hoek, 2011).

SCM is directed by three main objectives as *quality*, *time delivery* and *cost*. Quality is an important objective because it is visible by the end-customer and benefit to the loyalty of the customer (Harrison & Van Hoek, 2011). Time factor is also described as *responsiveness* which represents how fast the product can pass through the SC to reach the end-customer. Cost can give an advantage on the market when a low prices or high margin is reached. However, it includes a cost reduction at each stage of the SC as manufacturing, distribution, warehousing, etc. Harrison and Van Hoek (2011) mentioned the importance to have a collaborative effort from the overall partners within the SC. As to set the importance of these main objectives of logistics performance, it is crucial to look at the market of each product. For this, it exist a classification between order winners and order qualifiers (Hill, 2000) which allow categorizing the nature of different products. Order winners represent the qualities, advantages of a product enabling it to lead in the market against the completion in a significant manner. Order qualifiers

characterize the qualities that a product must have in order to be considered by customer on the market.

Due to increasing competition between firms and the difficulty of improving the value added to end products on the three criteria mentioned above, stand out against the concurrency becomes increasingly hard. To address this, organizations can work on three other factors which are the control of variability, anticipate on the uncertainty and improve the sustainability of their SC. The variability in logistic is defined by being on time with the right quantity and the right quality comparing to the target fixed. Uncertainty encompasses all the external factors which are unpredictable and affect the SC. To deal with uncertainty, firms choose two options to be flexible against it; first is to be “proactive” which means to anticipate by increasing the capacity of the company; secondly being “Reactive” by keeping an eyes on the internal and external environments evolution to allow a quick response at any factor that start influencing negatively the whole SC (Harrison and Van Hoek, 2011).

In a world where the environmental aspect has gained huge importance, the desire to design a sustainable SC from firm has respectively risen. Over the two lasts decades, the research area of Sustainable SCM have been stimulate by a growing demand from stakeholder, customers, organization as non-governmental, as well as employees to see the environmental and social influence taking into account into the management of the SC (Carter and Easton, 2011).



Figure 5- Sustainable supply chain management framework (Source: Carter & Rogers, 2008)

To illustrate the concept of Sustainable SCM, Carter and Rogers (2008) propose a framework (Figure 5) representing the intersection of Environmental, Social and Economic performance to reach the sustainability. This conceptualization allows SC manager to fix common objectives on their economic, social and environmental goals for better sustainable results. To conclude, the *competitiveness of a supply chain* can be described as “*meeting end-customer demand through supplying what is needed in the form it is needed, when is it needed, at the competitive cost*” (Harrison & Van Hoek, 2011).

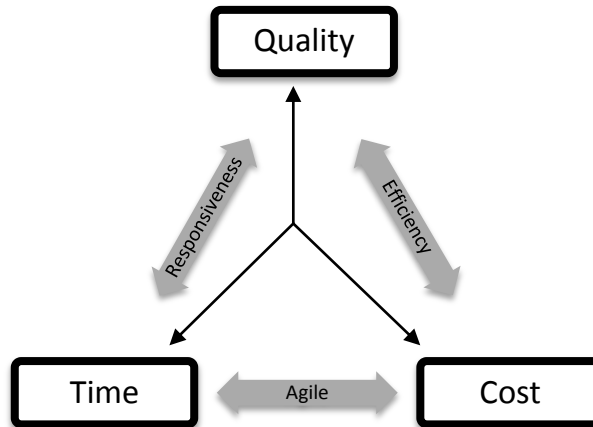


Figure 6 - SCM: the Magic pyramid (La "pyramide magique") (Source: Mesnard & Dupont, 1999)

The Figure 6 combines the three main objectives with three major characteristics of SC. In fact, the SC can be *reactive*, also call responsive, when there is the ability to respond to the evolution of the markets demand. Or *efficient* when the focus is on the elimination of waste and *agile* when the cost is balance regarding the level of service and delivery time. This explains the importance of optimizing on this three criteria the SC and to adapt it to the nature of the product produced or transported.

2.3.1 Management Orientation

To succeed, companies set up goal and define their management orientation to reach their goal. Management terminology encompasses the set of method and activity used to make sure that the work is done at the right time, the right place and with the right quality. Within the SCM, flow of material, information and finance have to be managing from upstream to downstream the SC. The management orientation represents the orientation decide by the company as customer or production focused, vertical or horizontal hierarchy orientation (Hilletoft, 2010). Globalization effect leads to a shift in management of the SC from local to global focus. From 1950 to nowadays, four major global shifts have been identified in Europe, as shown in Table 3 (Harrison and Koek, 2011).

Table 3 - Descriptive table on the four global shifts in Europe (Source: Harrison and Koek, 2011)

Global Shift in Europe	First	Second	Third	Fourth
Period	From 1950s to 1960s	From 1960s to 1980s	From 1980s to 2000s	New trend emerging
Primary Drivers	Labour shortage	Labour costs and flexibility	Market entrance	Responsiveness to customer orders, focus on reducing risk and increase in social and environmental responsibility
Shift of labour and investment towards	European countries without labour shortage	Newly industrialised countries, low labour cost countries	Eastern Europe, China, Latin America	Market region for responsiveness and lower risk. To low-cost region for social responsiveness initiatives

It is interesting to notice a shift in management focus (primary drivers in the Table 3) from labour cost and flexibility, production capacity to customer satisfaction with quick response to the market change, as well as an interest in environmental responsibility. To respond to this international evolution of the market, companies have to balance their SCM between an efficient or responsive orientation. Also, the management of the logistics functions become more focus on the whole SC instead of separate logistics activities. By this firms tend to integrate together all the logistics functions. New research area known as SC integration (SCI) tries to improve the knowledge on this. SCI can be defined as *“the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter- organization processes. The goal is to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer at low cost and high speed”* (Flynn et al, 2010). According to Flynn et al (2010), SC integration leads to long-term partnership based on trust and allow sharing information more efficiently. This concept helps SC manager to reduce cost and increase customer satisfaction. However, it is complex to implement and require efficient information flows (Power, 2005).

The main goal of managing the SC nowadays is on increasing the customer satisfaction and the competitiveness of organizations by considering logistics activities as core strength. This can be observed also by an increase in use of performance measure on the SC. Gunasekaran et al (2001) proposed a framework to evaluate performance measurement on the four main parts in a SC which are plan, source, make and deliver, see Figure 7.

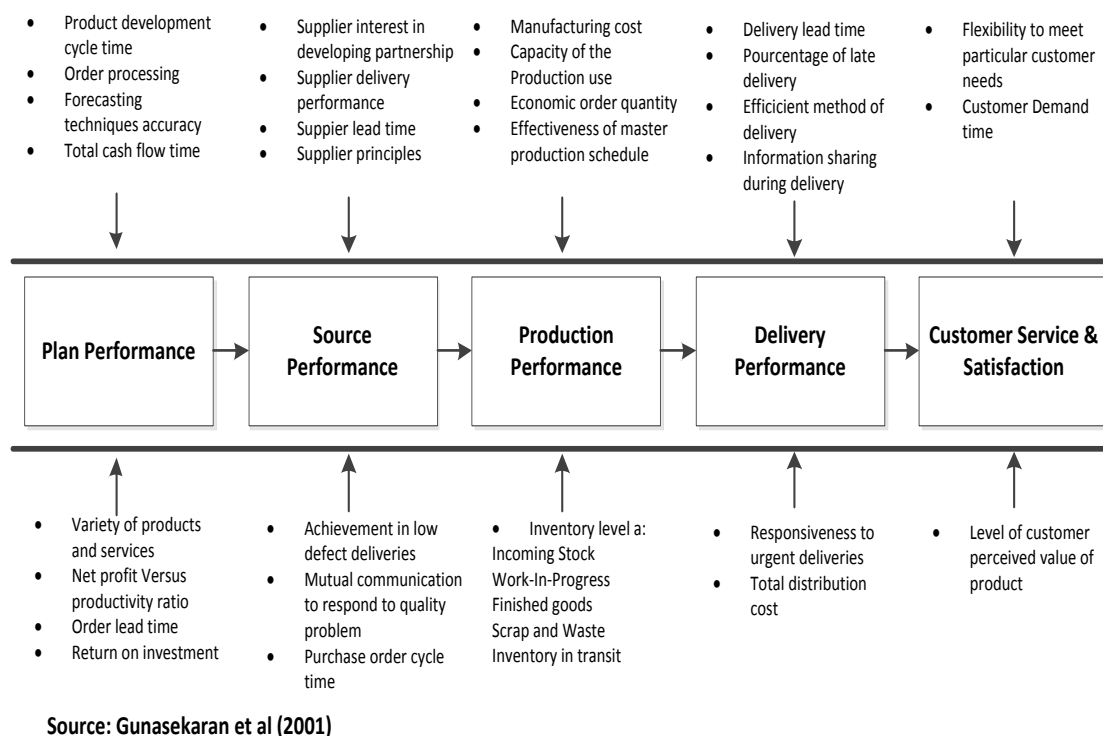


Figure 7 - Framework to evaluate performance in supply chain

2.3.2 Strategies

Within the globalization factors and the rapid evolution of markets demand, organization has to integrate numerous suitable solutions to each specific product and the change in market condition (Hilletoft, 2008). This has to cover the entire SC from the purchasing of raw material to the distribution to the end-customer. Due to the difference in requirement by all the factors that affect the SC as the nature of the product (functional or innovative), the demand characteristics (predictable or unpredictable), etc, firms have to define their strategy within the SC in various manner. For example, a lean strategy may be used to respond to a predictable demand. This issue will be described in further section. As discuss previously, there is a need of strategy to increase competitiveness by setting a long-term plan for the SC. Harrison and Van Hoek (2011) defined logistics strategy as:

“A Set of guiding principles, driving forces and ingrained attitudes that help to coordinate goals, plans and policies, and which are reinforced through conscious and subconscious behaviour within and between partners across a network.”

Many researchers have proposed different approaches to define strategy based on various factors. We can list Whittington (2000) who proposed four strategies based on two axes the goals and process of strategy. Figure 8 represents these four strategies:

- *Accommodate*: the strategy is not planned but realize on a daily bases and the goals of the firms are multiples.

- *Systemic*: the strategy is set in a long-term plan encompassing all the goals of the organization from manufacturing, marketing, logistics and others existing departments.
- *Evolve*: the strategy is focusing mainly on the profit and adapted to the evolution of the need and change in the market and demand.
- *Classical*: The strategy targets the profits in a long-term formulate planned process.

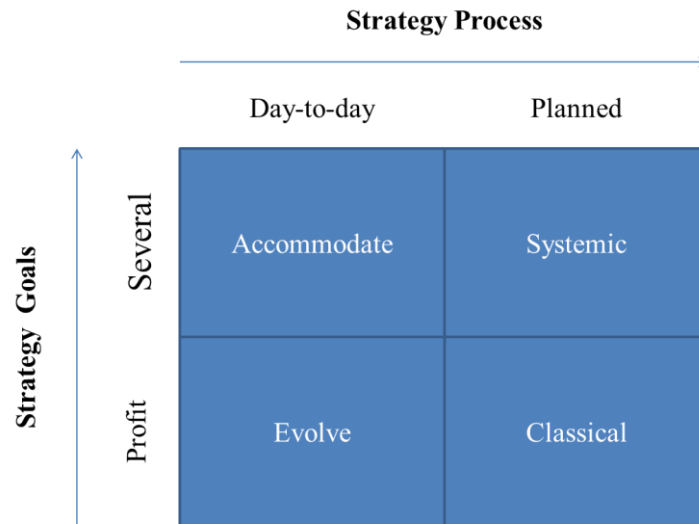
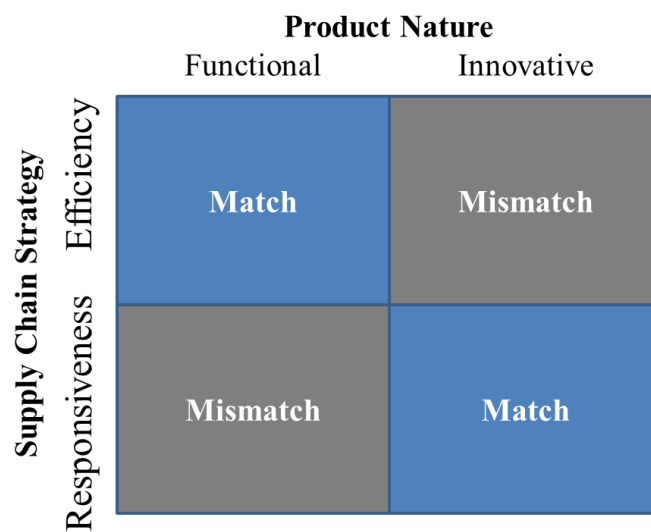


Figure 8 - Four options to set strategy (Source: Whittington, 2000)

The first major contribution in the literature of SC Strategy has been made by Fisher (1997) depending on the nature of the products. He distinguishes functional and innovative products for which suggest applying an efficient SC for the first category whereas a responsive SC for the latest one. Figure 9 below illustrates the Fisher’s model.



Source: Fisher (1997)

Figure 9 - Matching supply chain strategy with product nature

The concept of functional and innovative products is described in Table 4. Functional manufactured goods have a predictable demand and a long product life cycle in contrast to inventive goods which follow an unpredictable demand and a product life cycle up to one year. In addition, functional products have a low variety and a long lead-time, unlike innovating product.

Table 4- Functional versus innovative products (Source: Fisher, 1997)

Aspect of demand	Functional (Predictable demand)	Innovative (unpredictable demand)
Product life cycle	More than 2 years	From 3 months up to 1 year
Contribution to profit margin (in %)	5 to 20	20 to 60
Product variety	Low, 10 to 20 variants per category	High, millions of variants per category
Lead time required for mate-to-order products	6 months to 1 year	1 day to 2 weeks

In accordance with Fisher, an efficient SC goal is to “supply predictable demand efficiently at the lowest possible cost”. In a responsive SC goal is to minimize stock outs, forced markdowns and obsolete inventory. Table 5 below presents a comparative of the characteristics of an efficient versus responsive SC more in detail.

Table 5 - Efficient versus responsive supply chain (Source: Lo & Power, 2010)

	Efficient supply chain	Responsive supply chain
Primary purpose	Supply predictable demand efficiency at the lowest possible cost	Respond quickly to unpredictable demand in order to minimize stockouts, forced markdowns and obsolete inventory
Manufacturing focus	Maintain high average utilization rate	Deploy significant buffer stocks of parts or finished goods
Inventory strategy	Generate high turns and minimize inventory throughout chain	Deploy significant buffer stocks of parts or finished goods
Lead time focus	Shorten lead time as long as it does not increase cost	Invest aggressively in ways to reduce lead time
Product design strategy	Maximize performance and minimize cost	Use modular design in order to postpone product differentiation for as long as possible
Supplier selection criteria	Select primarily for cost and quality	Select primarily for speed, flexibility and quality

Christopher et al. (2006) include the parameter of replenishment lead-time in his proposed classification model of SC strategy. This addition is argued by the fact that replenishment lead-time can have a severe influence on the responsiveness of the whole SC, as well as the recent trends on lead-time that spread due to the globalization.

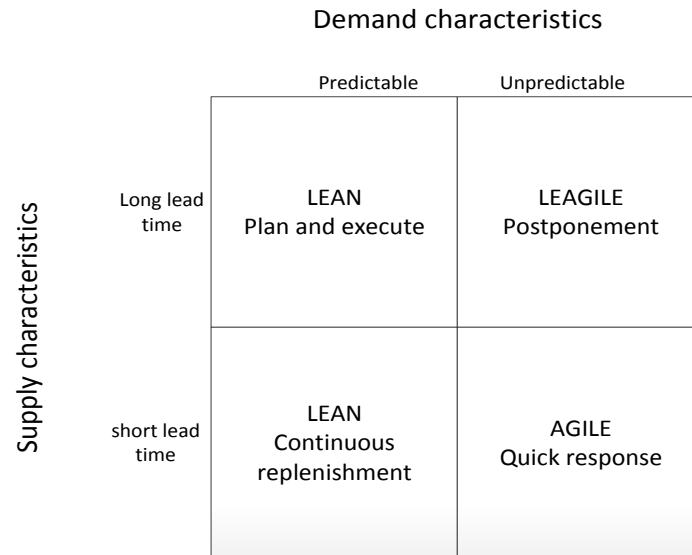


Figure 10 - How Supply and Demand Characteristics guide SC strategy selection (Source: Christopher et al., 2006)

Figure 10 represents through a matrix the four SC strategies based on the predictability of the demand, short or long lead-time. More recent research has shown two interesting points. Firstly, the importance to apply different strategies in relation to the variety of products within the organization (Hilletoft, 2008). Secondly, criticisms of the Fisher’s model have been done by various researchers. Lo and Power (2010) indicate a gap between theories and its use by industrial. It would seem that the use of a “hybrid” strategy unrelated to the nature of the primary product of the organization is predominantly used. It is support that firms mainly are involving the use of efficient and responsive strategy concurrently in the main aim of cost efficiency. This suggests a complementarily used of these strategies to succeed in managing the wide variety of products on the markets.

Table 6 - Comparison between lean, agile and leagile SC strategy (Hilletofth, 2009)

Distinguishing attributes	Lean SC	Agile SC	Leagile SC
Focus	Cost efficiency	Responsiveness	Both
Typical products	Standard	Special	Standard, special and modular
Market demand	Predictable	Volatile	Volatile and unpredictable
Product variety	Low	High	Medium
Product life cycle	Long	Short	Medium
Customer drivers	Cost	Lead time	Service level
Market winner	Cost	Availability	Cost and availability
Market qualifiers	Quality, lead time availability	Quality, cost, lead time	Quality and lead time
Profit margin	Low	High	Moderate
Dominant costs	Physical costs	Marketability costs	Both
Stock out penalties	Long term contractual Buy goods	Immediate and volatile Assign capacity	No place for stock out Vendor managed inventory
Purchasing policy	Highly desirable	Obligatory	Essential
Information enrichment	Algorithmic	Consultative	Both/either
Forecast mechanism	Essential	Essential	Desirable
Lead time compression	Essential	Desirable	Arbitrary
Eliminate muda	Desirable	Essential	Essential
Rapid reconfiguration	Arbitrary	Essential	Desirable

Table 6 shows a comparison of lean, agile and leagile SC and it can be seen the possible use of the combine leagile solutions to respond to a diversity in product which be either standard (as commodities) or special (like fashion goods), as well as a combination on the market demand, product life cycle or else order winners and qualifiers. To resume, SC strategy evolves to be adapted to the rapid changes of the markets demand and internal and external influencing factors on the SC.

2.3.3 Information Technology

The role of Information Technology (IT) is to manage the SC process that has considerably risen in the corporate world (Wu et al, 2006). It is interesting to notice that IT is one of the outsourcing options which allows to, reduce the risk of investment and gain in competency. To support the management of the information and material flow, information technology (IT) is nowadays used by most of the companies. According to Gunasekaran *et al* (2001), information technology's role in the management of data has shifted to become more active by the move from a simple way to show data to being an advance process to operate data in real-time. As defined by Chopra and Meindl (2010), the use of IT in SC is to provide at the right time, to the right person, the right information. Firms can reduce the risk caused by the bullwhip effect by using IT which allows sharing information in a more accurate way with the various partners along the SC. IT also permits to connect database between various department within an organization as logistic, production, finance, purchasing, etc. There are various existing ways where information systems are involved in the improvement of information sharing and management such as MRP (Materials Requirement Planning), ERP (Enterprise Resource Planning), and CPFR (Collaborative Planning, Forecasting and Replenishment). Figure 11 categorizes this information system between inter and intra-organizational and planning and execution operations.

INTER-ORGANIZATIONAL	CPFR	EDI VMI
INTRA-ORGANIZATIONAL	APO ERP AMI Warehouse optimization	Vendor quality management Cross docking WMS TMS YMS
	PLANNING	EXECUTION

Figure 11- Classification of Information System (Source: Sherer, 2005)

According to Hilletofth (2010), SCM Information System can be classifying into three approaches. The first one is organizational approach which encompass intra-organizational system that manage and control activities inside companies and inter-organizational that synchronies functions between companies. The second approach, data management, divided between transactional used for collecting, processing and storing data and analytical systems used to analyze the data collected. The last approach, process management, divided between planning systems used to identify suitable order processes and executing systems used to implement and control activities in the aim of tracking status of products.

However, ERP systems solutions gain a dominant position on the market. It has the advantage to automate business processes, to have real-time access to information and allow improving SCM by improving efficient information sharing through the entire company. It allows also sharing data with partners across the SC which has led to better collaboration between the actors. This will be describes in the next section.

2.3.4 Partnership

With the constant globalization, SCs have greatly expanded, that include many actors. And to be more efficient, a need in partnership between all the actors in the SC has become crucial. Despite the simplicity of collaborations concept, its implementation has been a failure in most of the case. The reason for that is a lack of trust and to have resort to much on technology. Barrat (2004) identified some barriers to an efficient collaboration under the principles of culture; as openness and communication culture, trust, information exchange which represents cultural elements affecting any exchange between partners. Barrat (2004) proposed four strategic elements to improve SC collaboration as *Cross functional activities, Process alignment, Joint Decision Making, SC metrics*. Because partnership is more that working for each other but working with each other to improve the performance of each.

3 Methodology

In this section, the research methodology that is used for this thesis is presented and evaluated. To begin with, the research process is explained. Thereafter, the research design is discussed. Finally, the research quality is discussed

3.1 Research process

The research related to this master thesis is carried out for a period of 5 months. The research reported in this thesis can be segmented into two parts, firstly being the literature review and secondly being analysis carried out by the results obtained from the survey. The empirical data and theoretical findings from the literature are used to analyse the data obtained from survey, to answer the research questions as mentioned in the introduction chapter.

The scope during the research process can be seen evolving from the broad domain of globalization and relating to two areas of logistics outsourcing and SCM. In the first part of literature review, we have concentrated our search on understanding the latest research in the area of logistics outsourcing and SCM, and finally we also try to understand what kind of research gap can be seen between these areas. The link between these two areas is a relatively new domain of research, and finally to see the influence between these two is our main scope.

It can be concluded that the research has progressively evolved with contributions both from empirical findings and new theories during the research process. The aim of the thesis has evolved during the research process.

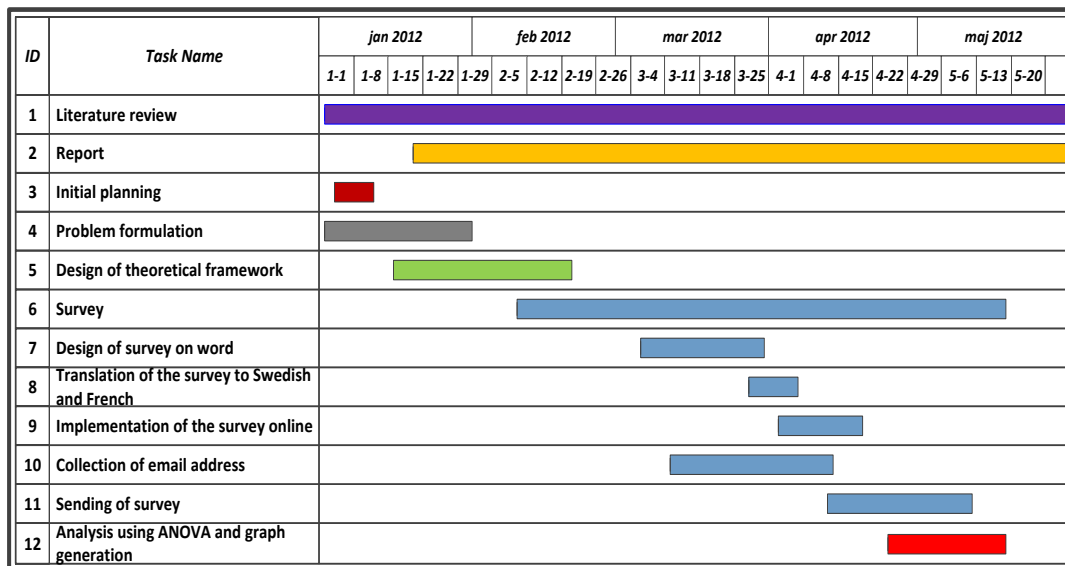


Figure 12 - Research process

To explain further our research process we have developed the Gantt chart describing the activities in our thesis work and time needed for each process. The longest activity we carried out was the literature review which evolved constantly with the report writing activity, the next phase was to carry out initial planning and problem formulation. Based on the plan and the problem formulation we

developed the theoretical framework which further led to the development of the survey process which had further activities in them. The final process was to carry out the analysis using ANOVA, and to answer the research questions formulated.

3.2 Research design

Research design provides the bond that is used to assemble different parts of the work to the proposed research questions in order to fulfil the purpose. There are two types of research design, structured and unstructured (Ghauri & Gronhaug, 2010). In this master thesis the research design can be classified as a mix of both structured and unstructured manner, primarily a comprehensive theoretical framework is observed which becomes more structured and narrow in constraint to reach the problem area.

3.2.1 Research approach

Our master thesis will be following the deductive approach (Kovacs and Spens 2005), with quantitative research process (Williamson, 2002), to support our theoretical framework developed and also to analyse the survey data. This master thesis will deduce from the existing reality, to see if logistics outsourcing has any kind of influence on SCM, the theory is described below for deeper understanding as to how this approach was chosen.

Research approach can be seen in two types of directions, one in a scientific direction which incorporates inductive and deductive methods, and methodical direction comprising of qualitative and quantitative methods (Williamson, 2002). Deductive research can be described as generalizations of conclusions from testing a theoretical hypothesis. Inductive research can be described as generalizations of conclusions from observing the reality (Williamson, 2002). Based on the literature of Kovacs and Spens (2005), a deductive research is more appropriate for testing existing theories and not creation of new theories, and there is a lot of domination by deductive research especially in the field of logistics. Quantitative research focuses on data type obtained and relationship between different variables, qualitative research focuses on data type not measured in terms of numbers rather quality of work (Williamson, 2002). It's also interesting to observe logistics research being dominated by quantitative research approach according to Mentzer and Khan (1995).

3.2.2 Research strategies

There are various types of research strategies such as Experiment, Survey, and case study etc (Williamson, 2002). There are certain conditions which regulate the type of research strategy appropriate for a research. Firstly it is determined by the form of research question which has a main aim of answering the proposed research question. Secondly is by the control over the event by the researcher, and finally by focus on the contemporary events (Williamson, 2002).

As our research questions have a main focus on understanding the influence between logistics outsourcing and SCM. As the questions begin with HOW? And the answer to these questions can only be obtained through a large scale analysis of the data based on the research questions in these areas, a survey can be said as the most suitable research strategy for our thesis (Williamson, 2002).

3.2.3 Survey design

As the purpose is to *investigate how logistics outsourcing may influence supply chain management from a strategic perspective*, a survey is a suitable research method to investigate our purpose. It is vitally important to understand the difference between “survey” and “survey research”. Survey is fundamentally carried out for various non-research matters like investigating and polls on certain matters, while survey research is carried out to understand and strengthen the knowledge of scientific area (Pinsonneault & Kraemer, 1993; Malhotra & grover, 1998).

The main distinguishing characteristic of survey research from other methods like case study is the collection of information by obtaining data in a structured manner. The technique to collect data can be in the form of interviews, questionnaires, telephone interviews, etc. As the survey approach is quantitative method in nature, the information has to be in a standardized form, and the information is chosen from a sample of specific population, and answers from the sample can be generalized (Pinsonneault & Kraemer, 1993; Malhotra & grover, 1998). After performing a literature review to collect secondary data, a questionnaire will be made to collect the primary data through a web-based survey. Then the data collected will be analysed with quantitative method such as SPSS or ANOVA. The survey design for this thesis can be classified as a statistical survey type as our questions mainly try to obtain the data which are based on research questions. These survey types use data from a large sample of population and the survey questioners will be used to collect the data.

The survey questioner is developed from the research which addresses a similar issue by Hieltoft and Hilmola (2010). The survey consists of three parts, part one consists of general information related to the companies, second part is focusing on the logistics activities outsourced, and finally the last part is based on SCM strategy which is based on four parts which are developed with the support of specific key words.

Design of the Survey

The survey has been designed based on the previously defined theoretical framework. There are 4 sections in this web based survey: *Section 1*- this section is to collect the basic information from companies like its name, location and size etc. This part of the survey was optional as certain companies can choose to participate in this research and remain anonymous for confidentiality reasons. *Section 2* – this section is a yes or no part where companies can indicate what logistics options they outsourced. This was a mandatory section. *Section 3* – With the purpose of analysing how outsourced logistics functions influence firms

logistic strategies and directions, professional of the sectors were asked to rate 22 statements on the Likert's scale of 1 to 5. The statement below as described in Table 8 has been categorized into four sections (Management orientation, Utilized strategies, Utilized Information Technology, Partnership). This Table 7 is to be used as a guide for the purpose of observing and understanding the graphs which are analysed further.

Table 7- Statement on supply chain direction and strategy design for the survey

RQ 1 - Management orientation
a/ Management emphasis has shifted from managing separate logistics functions to managing whole supply chain.
b/ Management emphasis has shifted from managing local to global supply chain operations.
c/ Management emphasis has shifted from managing production capacity to satisfying customers.
d/ My company consider organizational collaboration a need for effective supply chain.
e/ Management emphasis is more on having an efficient supply chain rather than responsive supply chain.
f/ My company considers logistics performance as a cornerstone for our competitiveness.
g/ My company considers logistics as one of the core strengths.
h/ My company extensively measures logistics performance in terms of cost, productivity, customer service, asset management and quality.
i/ My company stays involved in the strategic management of the outsourced logistics operations.
RQ 2 - Utilized strategies
j/ My company has common, agreed-to strategies to standardize logistics operations.
k/ My company has common, agreed-to strategies to differentiate logistics operations.
l/ My company utilizes strategies to postpone movement and final product configuration.
m/ My company utilizes strategies for time-based logistics including continuous replenishment, quick response and just-in-time with customers / suppliers.
n/My company utilizes strategies for logistics process re-engineering.
o/ My company has strategies in place to facilitate reverse logistics.
p/ My company designs the supply chain in a sustainable way, as performing well economically, socially and environmentally, more today than two years ago.
RQ 3 - Information Technology
q/ My company believes in the strategic values of using IT in our supply chain.
r/ My company utilizes more integrated manufacturing and logistics information systems with more integrated applications.
s/ My company utilizes advanced supply chain planning to synchronize operations across the supply chain.
RQ 4 - Partnerships (relationships)
t/ My company believes in the value of strategic partnerships with key customers / suppliers.
u/ My company has developed and is pursuing a plan to establish and maintain business partnerships.
v/ My company has partnerships with customers / suppliers who operate under principles of rewards and risks.

Section 4- this section was to thank the respondents time for answering the survey questioner. They had an option to request the report after the analysis was carried out and also to see if the companies are further interested to participate in future research.

Data collection

It is vitally important to target the right companies and right personnel in order to obtain valid data for research. Hence we have targeted two countries to conduct this survey, Sweden and France. Sweden has been targeted to investigate the previous results obtained by Hieltoft and Hilmola (2010) and to observe the validity of their conclusions. The reason for targeting France has been made following suggestions for further research from the research paper previously mentioned, to target another country in Europe and the choice of France had been supported by the ease in the group to translate the questionnaire to French.

In order to define the size of the sample, the constraints have been taken into consideration to reach the right person and to obtain a population size important enough to be able to generalize the results collected. For this reasons, in Sweden we targeted the top 500 companies which fall under the category of manufacturing and logistics services.

We collected the relevant emails from the company's website, and we were able to find certain contact personnel who either were experts in logistics domain or they were responsible for company's external communication. We were able to find 381 valid emails for the top 500 companies in Sweden.

For France we used another targeted approach we gathered the contacts through Alumni of the Engineering school "Université Technologique de Troyes" at Troyes to target the professional of the sector in France, here we targeted the biggest companies in manufacturing and logistics sector (Available in the alumni database). For France, we were able to gather 74 valid emails, and all of these emails were the contacts who are working in logistics department. The technique used were different for France due mainly to cultural reasons, as the survey is not well considered, we have to change our approach to be able to get more responses. That is why through the Alumni, contact person, they were more concerned to answer the survey.

The first round of emails were sent out on 17th of April 2012, respondents had approximately 2 weeks to answer , and subsequently we send the second reminder on 4th of May 2012, here respondents had about a weeks' time to respond for the survey.

The emails and the survey were designed in three different languages, English, Swedish and French. The cover letters were also in three different versions, all the emails contained a unique link to the survey, through which the respondents could access the survey online.

The tool used to conduct an online survey is known as Survey monkey, this is one of the most common and effective tool which helps in constructing the survey and also easy to collect and view the responses.

Response from Sweden

We had prepared two versions in Swedish and English to overcome the language barrier. From the population of Sweden (381), we collected 39 responses (10% response rate) out of which 30 were valid responses. The reason to have some invalidated responses is that the questionnaire was not completed fully; it can be explained by the complexity of the section C of the survey and the need of experience and knowledge in both the profession and organization. We believe also that the part C of the survey might be too dense and discouraged the respondents. It is also interesting to notice that at 90%, organization that participated in our survey have an annual turnover superior than 10 million Euros.

Response from France

We had prepared two versions in French and English to overcome the language barrier. From the population of France (74), we collected 27 responses (36% response rate) out of which 26 were valid responses. In the responses collected in France, 80% of the companies that participate have an annual turnover over 10 million Euros.

Data analysis

There are various methods by which we can analyse the statistical data that has been gathered (Williamson, 2002), based on this literature we can analyse by methods such as SPSS, Chi Square test etc. The data which was collected was analysed with the help of statistical method known as ANOVA (Single factor analysis of variance). We used ANOVA factor to analyse the variation on logistics outsourced options against strategic SCM. Based on the literature by Carifio & Perla (2007) we can observe several advantages of ANOVA methodology such as:

- Efficient method and high rate of accuracy
- Inexpensive method
- Can be easily calculated using software's like MS excel
- Reliable as new research in the similar field are using ANOVA

There is various research and discussions which describes the credibility for using the ANOVA method and likert scale. As mentioned by Carifio & Perla (2007) they argue that likert scale analysis can be carried out by using ANOVA, even though there are other methods to carry out the statistical analysis. This choice is purely on the basis of the ease and usage of the method, hence for this thesis work we will be using ANOVA method to carry out the statistical analysis of the data obtained by survey. To carry out this analysis we used the help of Microsoft excel. Analysis will be carried out separately for Sweden and France, this method enables us to generate results in a graphical manner also, which makes the analysis part more clear.

3.3 Research quality

The quality of any research work is primarily judged on two criteria's they are validity and reliability. Validity is the chosen method measuring what it was supposed to measure. Reliability is the chosen method which is reliable in terms of measure and can be repeated with the same measure of results (Williamson, 2002).

3.3.1 Validity of research

Validity of a research can be achieved in two steps they are internal and external validity. Internal validity is accuracy or the quality of the research work, external validity is the degree at which results or findings can be generalized (Yin, 2008).

As the theoretical framework, developed will be broad in sense and will enable to validate the survey internally and the respondent's answers will enable us to observe the degree of external validity. The theoretical framework will encompass certain theories which will enable us to validate the survey which is validated with other similar research within the domain of our thesis; hence we can say that the survey which has been developed is validated to a certain extent as it has been developed from several research works.

3.3.2 Reliability of research

Reliability is at what extent the study can be repeated with same results (Williamson, 2002). The reliability for the survey can be seen as receiving a number of answers for questions, and how they were understood; to achieve this we are using simple questions with a scaling system. Then this questioner will be targeted to the required population following with a reminder mail after the first communication.

The survey which has been developed in a careful manner to ensure that the respondents can answer in the best possible manner and also the database of companies have been carefully selected to ensure a high response rate.

4 Results

In this section, we will be presenting the results obtained from the survey and analysis is carried out using ANOVA method. The findings are divided into two main parts, results on Sweden first, then France. Due to the amount of data collected, only statistically significant results are presented in this section.

4.1 Results on SWEDEN

Analysis of ANOVA results

In order to evaluate the potential influence of outsourced logistics function on how companies manage their SC process and define their strategy, the variance on the collected answer have been carried out. In Table 8 below we have catalogue statistically significant data. For the data to be considered as statically significant the p-value obtained should be lower or equal to 0, 05 (95% confidence).

Table 8-ANOVA single factor test statistically significant results (p-value) on the population from SWEDEN

Outsourced logistics functions:	Statements	p-value
RQ1 - Management Orientation		
A/ Warehousing - Terminaling	e/ Management emphasis is more on having an efficient supply chain rather than a responsive supply chain.	0.044
C/ Order Processing	e/ Management emphasis is more on having an efficient supply chain rather than a responsive supply chain.	0.043
G/ Product Return - Reverse Logistics	a/ Management emphasis has shifted from managing separate logistics functions to managing whole supply chain.	0.007
	b/ Management emphasis has shifted from managing local to global supply chain operations.	0.020
RQ2 - Utilized Strategies		
G/ Product Return - Reverse Logistics	p/ My company designs the supply chain in a sustainable way, as performing well economically, socially and environmentally.	0.017
RQ4 - Partnership		
C/ Order Processing	u/ My company has developed and is pursuing a plan to establish and maintain business partnerships.	0.011
	v/ My company has partnerships with customers / suppliers who operate under principles of rewards and risks.	0.045
F/ Product Assembly-Packing- Labelling	v/ My company has partnerships with customers / suppliers who operate under principles of rewards and risks.	0.033

Table 8 shows for each research question the sentences that can be taking into consideration for the analysis due to a satisfying statistical result on the ANOVA factors. Each sentence is connected to the outsourced logistics functions from the analysis as show in the table.

4.1.1 Influence on the Management Orientation – RQ1

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence the management orientation. Referred to Table 8 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents of the 9 statements regarding to management orientation according to the outsource activities.

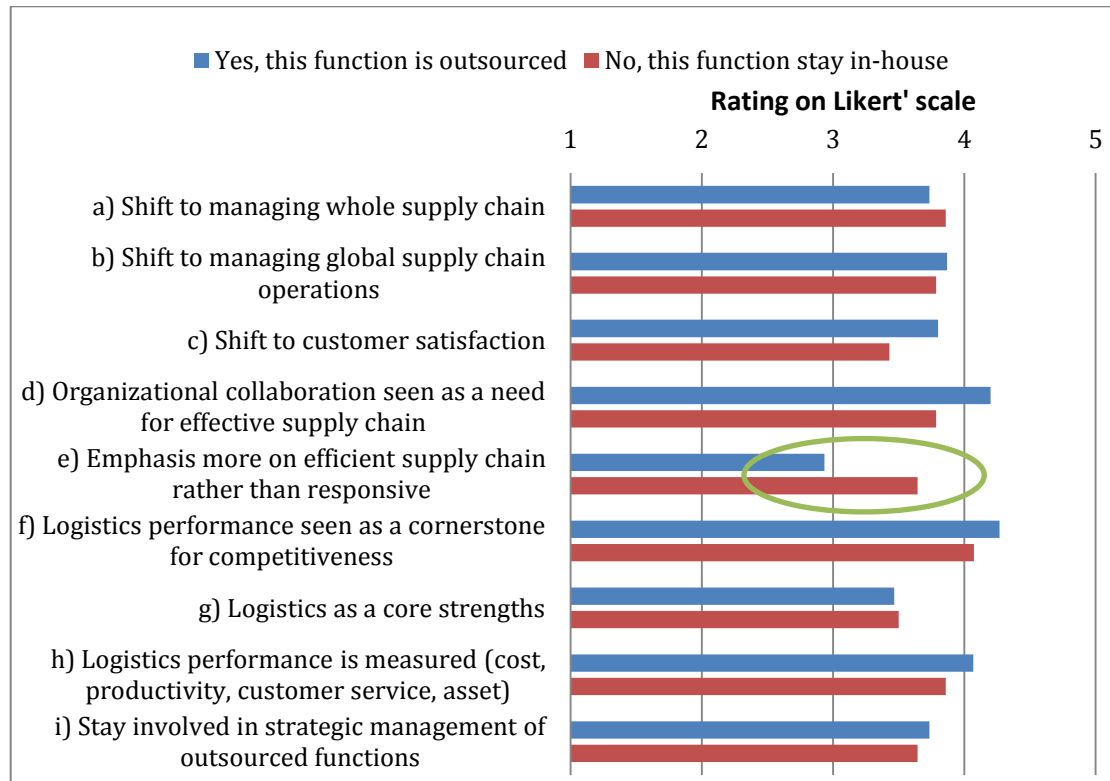


Figure 13- How outsourced Warehousing & Terminaling influences SC Management Orientation

To understand the figures in the entire result chapter, the blue colour represent the answer when the activity is outsourced; whereas the red colour the activity made in-house. Then the rating on Likert scale from 1 to 5 represent respectively if the respondent strongly disagree (=1) or strongly agree (=5) to the statement; with 3 as a neutral answer.

Based on Figure 13 and the Anova factor at 0,044 obtained for the statement e, companies that do not outsource warehousing tend to focus on efficiency compared to companies that outsource this function. We can also see that companies that outsource this function tend to give same attention to both efficiency and responsiveness (mean value ≈ 3). This seem right as we outsource to third party logistic to provide more options for our customers; like more responsiveness but cost stay an important factor. While companies focus their management on having a more efficient supply chain when having warehousing and terminaling function in-house (mean value ≥ 3.5). This can be explained by the control on the optimization of the warehouse from the company to reach an efficient SC.

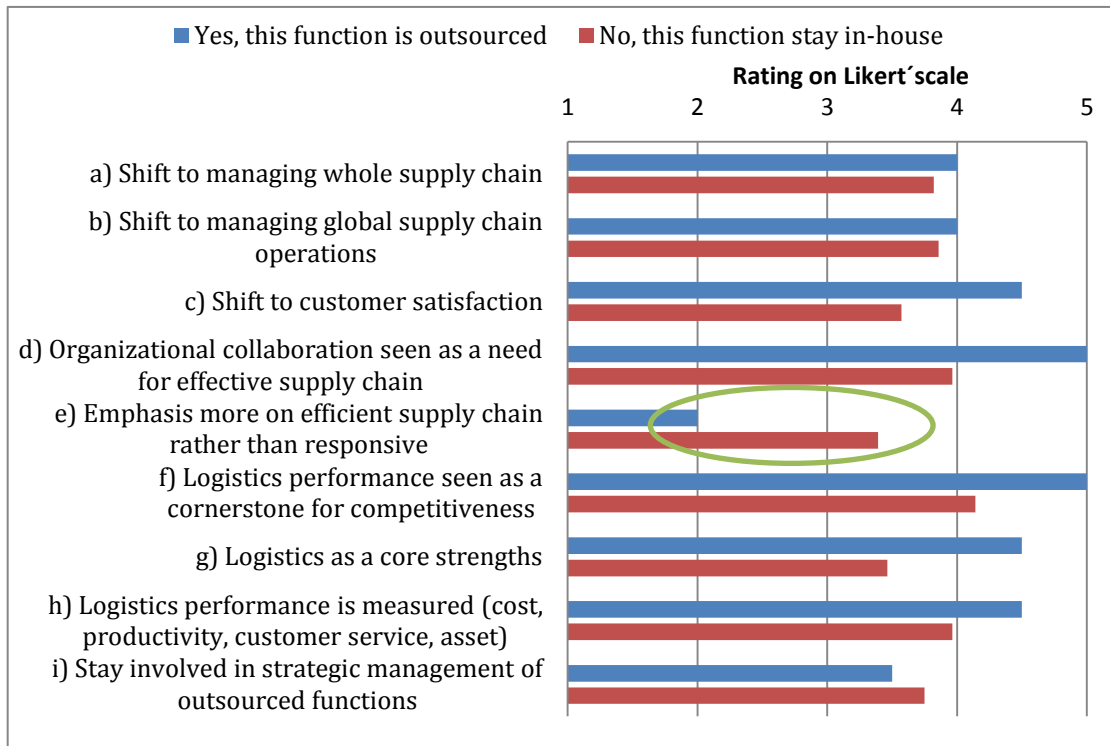


Figure 14 - How outsourced Order Processing influences SC Management Orientation

Figure 14 presents the influence of order processing outsourcing on management orientation. By the Anova factor at 0,043 obtained for the statement e, it seems that companies which use third party logistic for order processing tend to emphasis their effort on a responsive SC (mean value at 2) rather that companies which perform this activity. The explanation for this can be that providers have more resources and are more specialized for a quick response on the market and enable organizations to avoid investments. While companies that outsource their order, direct their management both on efficient or responsive SC (mean value close to 3).

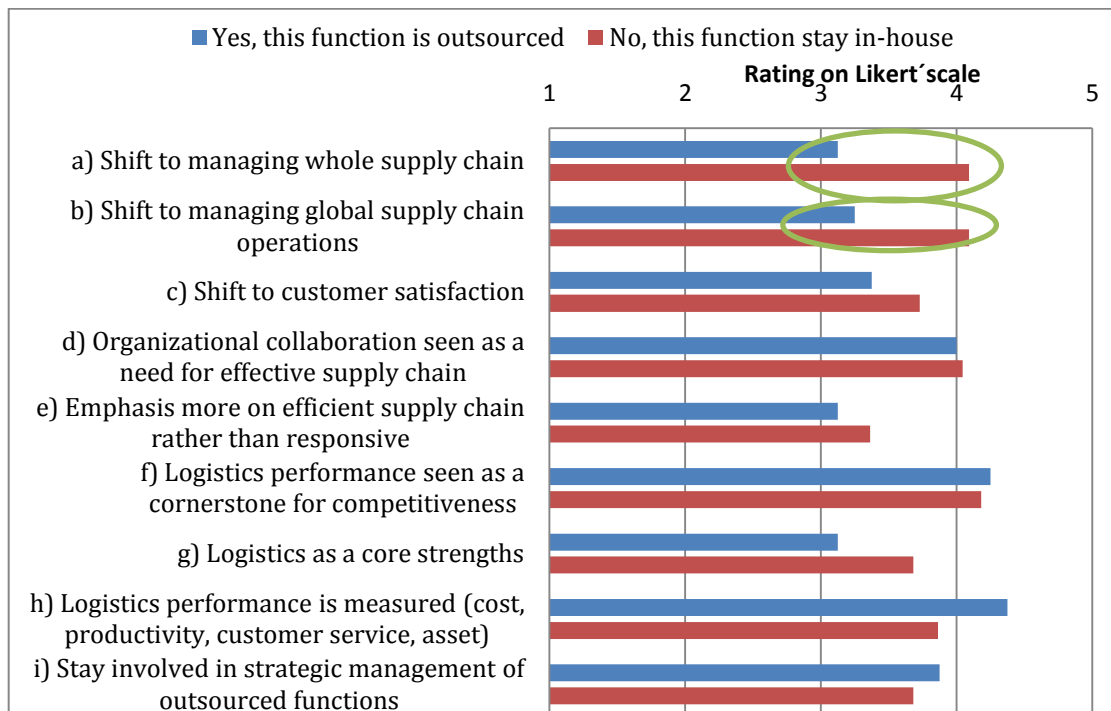


Figure 15 - How outsourced Product Returns & Reverse Logistics influences SC Management Orientation

Based on Figure 15, showing the influence of product returns and reverse logistics on management orientation, and the Anova factor at 0,007 for the statement a and 0,020 for the statement b, a significant difference can be observe between companies that do not outsource these functions which consider a shift in their management from separate logistics function to the whole SC also from managing local to global SC operations (mean value ≥ 4). Whereas organizations which outsource reverse logistics and product returns tends to give same attention to separate logistics function and the entire SC, as well as local and global SC processes (mean value close to 3).

This can be understand as mention by Cheng and Lee (2010) that firms which lack in competencies to ensure complex network in an effective way have the possibility to outsource either the entire or a portion of their reverse logistics to a third party logistics.

4.1.2 Influence on the Strategy Utilized – RQ2

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence the strategy utilized. Referred to Table 8 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents of the 7 statements regarding to strategies according to the outsource activities.

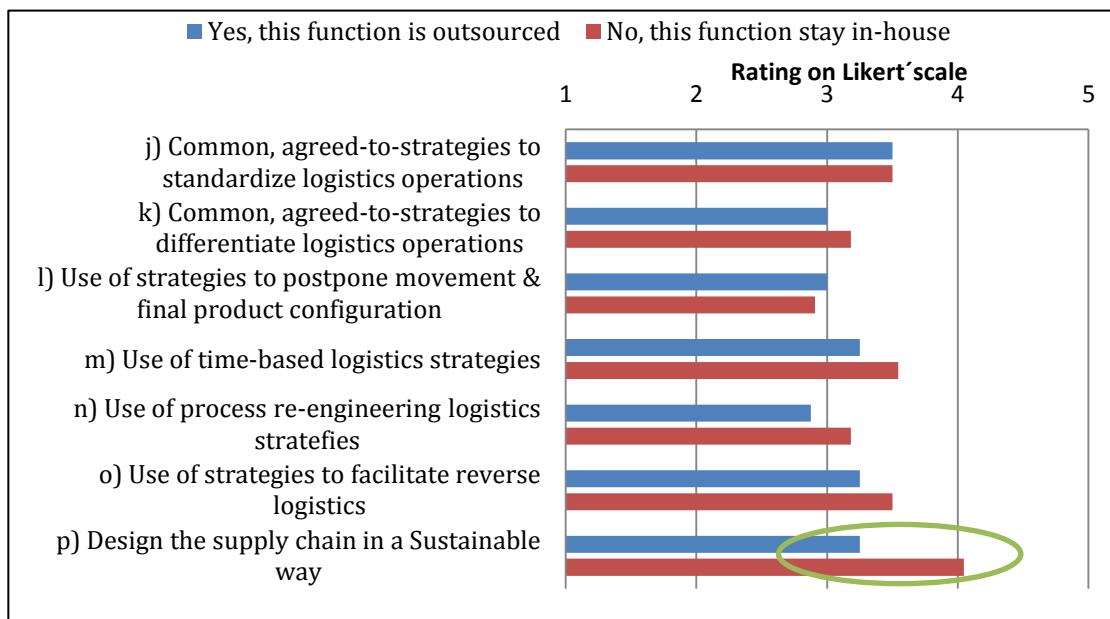


Figure 16 - How outsourced Product Returns & Reverse Logistics influences SC Strategy

Figure 16 represents the influence on strategy when outsourcing product returns and reverse logistics activity. With an Anova factor at 0,017 for the statement p, we can interpret that companies designing their reverse logistics tend to do it more in a sustainable way (mean value equal to 4) compared to firms that outsource this function. This is not surprising as this strategy is used by a majority of big scale companies which tend to appear as “green” by giving importance in sustainability in the strategy of their SC as it improve their reputation. As the range in services offer by third party logistics to design reverse logistics is large, this may explain why the strategy is not only focused on sustainability.

4.1.3 Influence on the Partnership across the supply chain – RQ4

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence partnership across the SC. Referred to Table 8 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents, of the 3 statements regarding to collaboration between actors across the SC according to the outsourced activities.

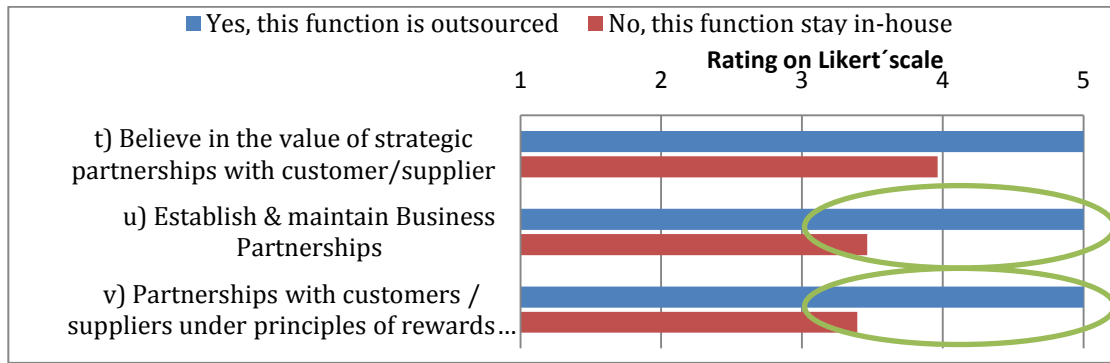


Figure 17 - How outsourced Order Processing influences Partnership across the SC

Figure 17 draws the influence of outsourcing order processing on partnership across the SC. The Anova analyse provides an Anova factor at 0,011 on the statement u and 0,045 for the statement v. We can observe a significant difference expressing that companies outsourcing order processing give more importance in partnership as business working under principles of rewards and risks with suppliers (mean value = 5) than companies having order processing in-house (mean value \approx 3.5). This can be understand by the importance of having contract with suppliers while outsourcing order processing to avoid further problem in order and create a win-win situation between partners.

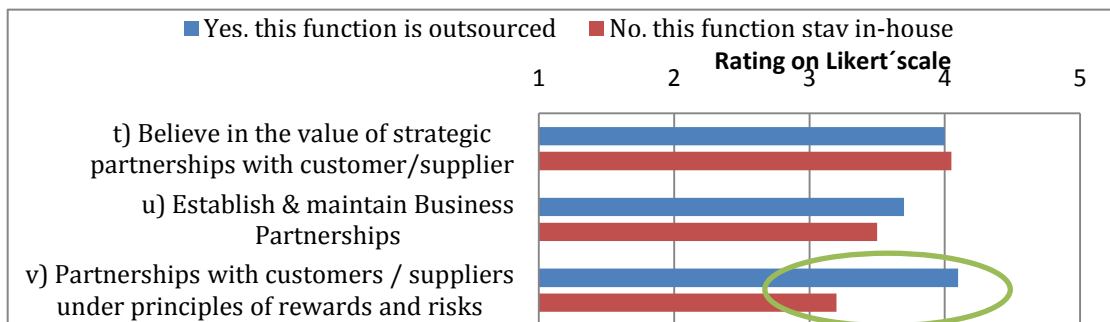


Figure 18 - How outsourced Product Assembly, Packing & Labeling influences Partnership across the SC

Figure 18 confirms the trend from the previous graph (figure 17) that collaboration is more important when logistics functions are outsourced. As can be noted organization that outsourced product assembly, packing and labelling tend to considers more important partnership with suppliers with risks and rewards (mean value equal to 4) than firms executing this function. This is logical as partnership relationship needs to be operating under factors which can benefit the companies, the one which outsources this function and the one which derives the business from them.

4.2 Results on FRANCE

Analysis of ANOVA results

In order to evaluate the potential influence of outsourced logistics function on how companies manage their SC process and define their strategy, the variance on the collected answer have been carried out. In Table 9 below we have catalogued statistically significant data obtained in France. For the data to be considered as statically significant the p-value obtained should be lower or equal to 0, 05 (95% confidence).

Table 9-ANOVA single factor test statistically significant results (p-value) on the population from FRANCE

Outsourced logistics functions	Statements	p-value
RQ1 - Management Orientation		
D/ Inventory Control	b/ Management emphasis has shifted from managing local to global supply chain operations.	0.036
G/ Product Return - Reverse Logistics	i/ My company stays involved in the strategic management of the outsourced logistics functions.	0.048
RQ2 - Utilized Strategies		
D/ Inventory Control	m/ My company utilizes strategies for time-based logistics including continuous replenishment, quick response and just-in-time with customers / suppliers.	0.035
H/ Information Technology	n/ My company utilizes strategies for logistics process re-engineering.	0.003
	p/ My company designs the supply chain in a sustainable way, as performing well economically, socially and environmentally.	0.044
RQ3 - Information Technology		
B/ Transportation - Shipment	r/ My company utilizes integrated manufacturing and logistics information systems.	0.036
RQ4 - Partnership		
C/ Order Processing	u/ My company has developed and is pursuing a plan to establish and maintain business partnerships.	0.028
D/ Inventory Control	u/ My company has developed and is pursuing a plan to establish and maintain business partnerships.	0.002
G/ Product Return - Reverse Logistics	u/ My company has developed and is pursuing a plan to establish and maintain business partnerships.	0.002

4.2.1 Influence on the Management Orientation – RQ1

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence the management orientation. Referred to Table 9 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents of the 9 statements regarding to management orientation according to the outsource activities.

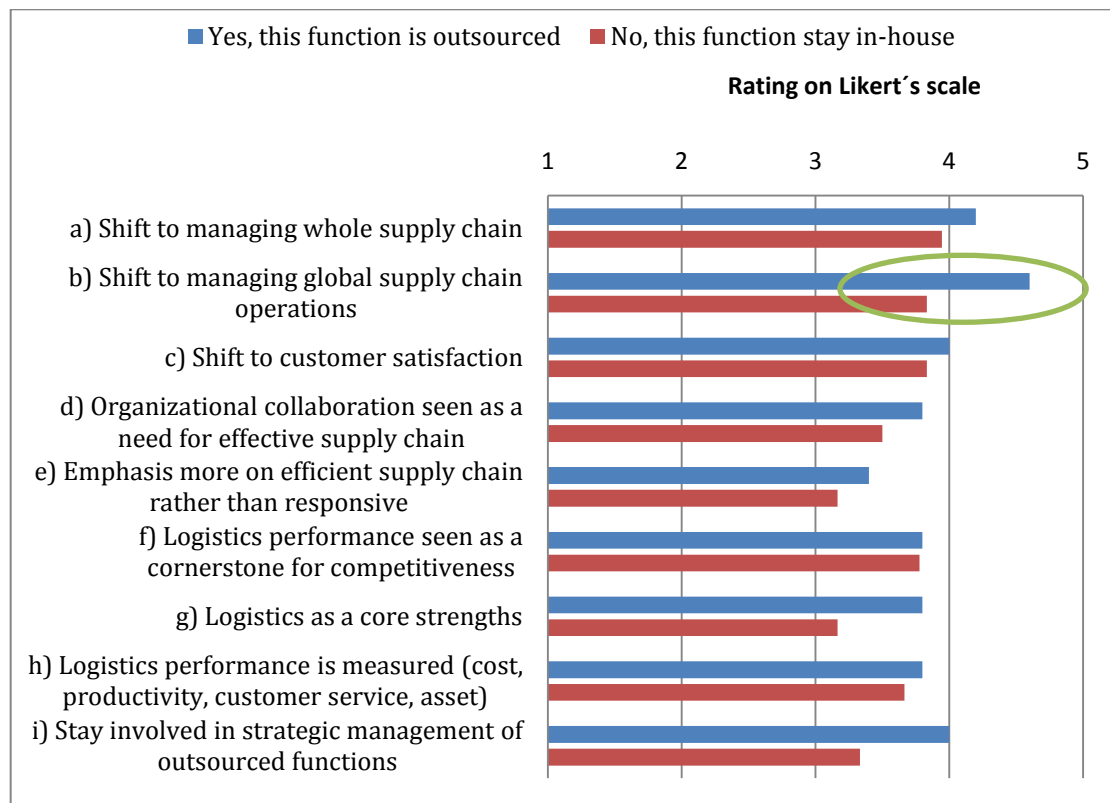


Figure 19 - How outsourced Inventory Control influences SC Management Orientation

Figure 19 above indicates the influence of inventory control outsourcing on the management orientation in SC. The analysis of Anova factor on the statement b gives a result at 0,036 which is statistically significant. We can observe that companies which have outsourced this function have shift their management from local to global SC operations (mean value > 4.5) more than firms which are keep this activity in-house (mean value close to 4). This can explained that when big manufacturing companies tend to have global scale market, having inventory control outsourced makes the SC at a global scale operation. So we can conclude that in France, there is a trend in shifting to managing global SC operations which is emphasized when inventory control is outsourced. This seems logical as third party logistics provide a specialized service and strengthens capacity of their clients without big investments for them.

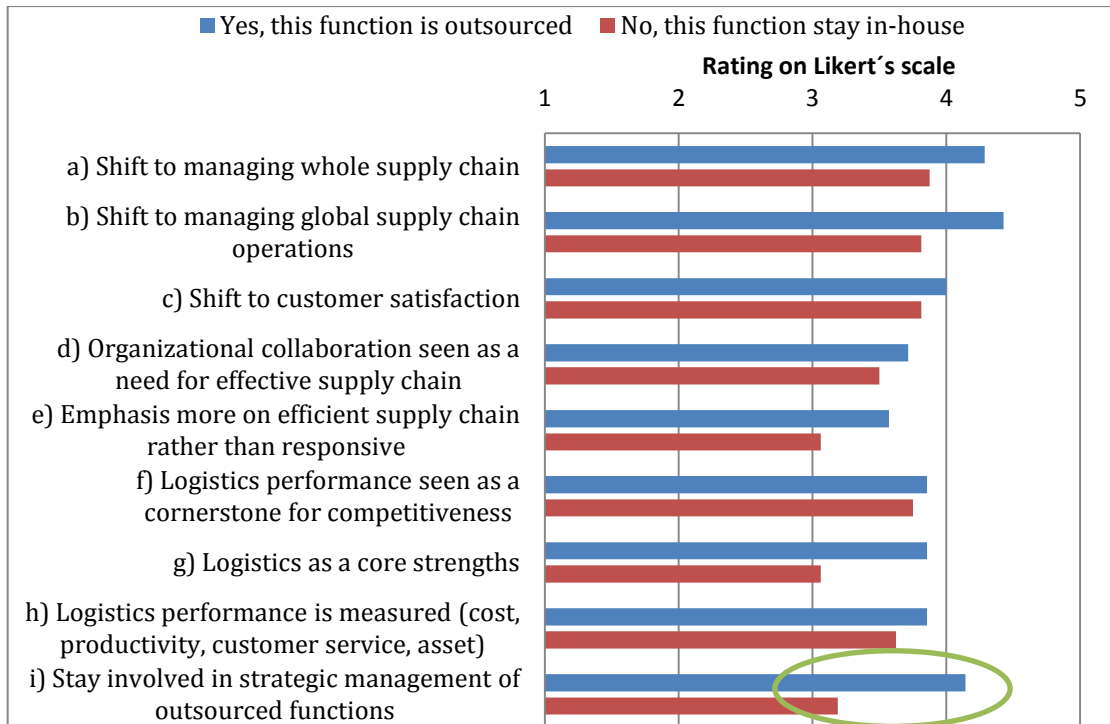


Figure 20 - How outsourced Product Return & Reverse Logistics influences SC Management Orientation

Figure 20 on the influence of Product return and reverse logistics on SC management orientation confirms the trend observes previously as a shift in managing global SC operations which is emphasized when outsourcing is used. We can see this by the Anova factor = 0.048 seems to indicate that companies outsourcing reverse logistics tend to stay more involved in the strategic management of the outsourced functions (mean value > 4) compared to firms designing their reverse logistics (mean value > 3). The reason for more involvement could be to influence more amount of control on the 3PL company at a strategic level as reverse logistics project represent a great influence on the reputation of the brand.

4.2.2 Influence on the Strategy Utilized – RQ2

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence the strategy utilized. Referred to Table 9 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents of the 7 statements regarding to strategy according to the outsource activities.

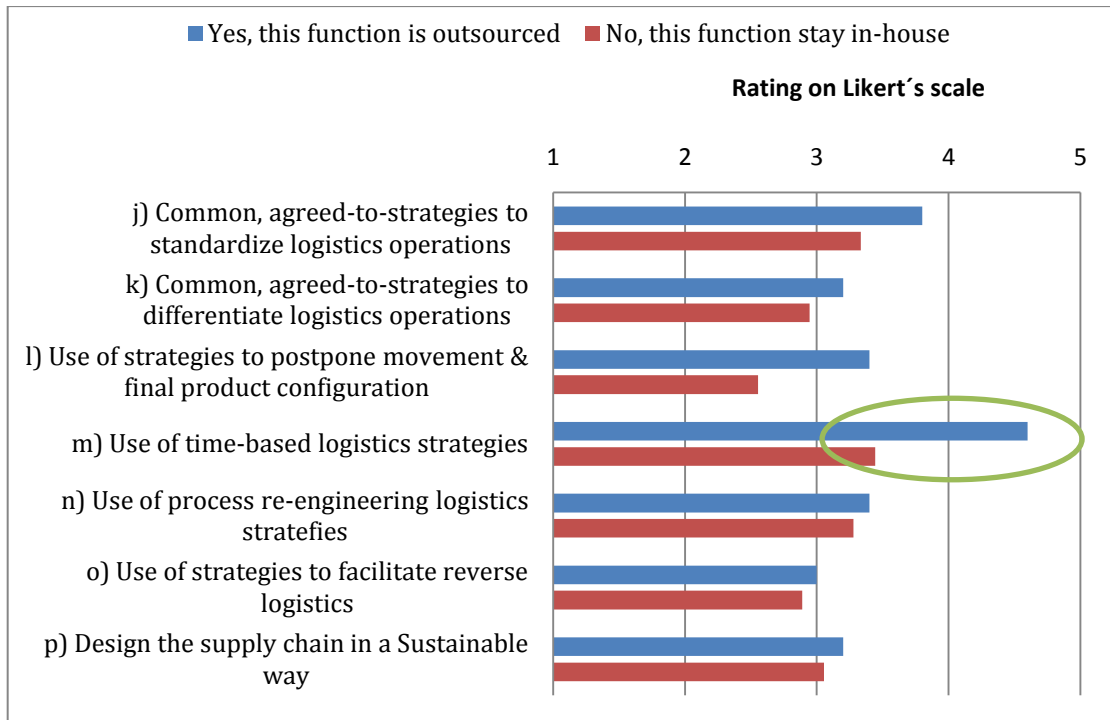


Figure 21 - How outsourced Inventory Control influences SC Strategy

Based on Figure 21, presenting the influence of inventory control outsourcing on strategy and the Anova factor at 0,035 for the statement m, we can describe a significant different showing that companies outsourcing inventory control tend to have more SC strategies which are time based including continuous replenishment, quick response and just-in-time with its customers and suppliers (mean value ≈ 4.5) than firms doing their inventory control (mean value ≈ 3.5). This seems right as when outsourcing an activity companies choose providers according to the different services offered and set a contract. Third party logistics providers have to differentiate their competencies on the market especially by offering time-based logistics strategies experiences.

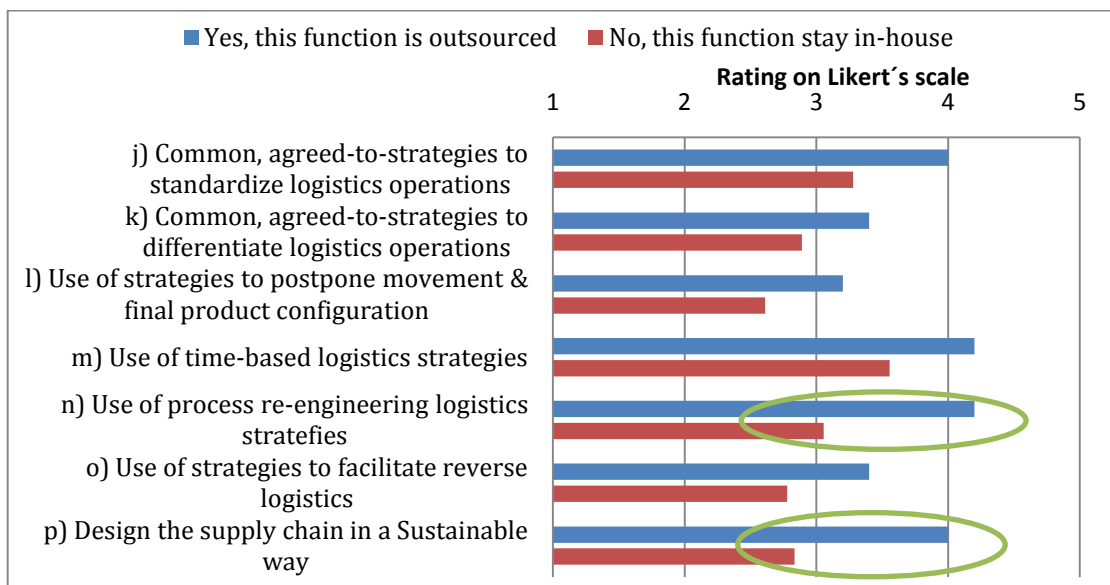


Figure 22 - How outsourced Information Technology influences SC Strategy

Figure 22 on the influence of outsourcing Information Technology on SC strategy shows a significant difference. Anova factor at 0,003 for the statement n and 0,044 for the statement p, we can observe approximately same result for both that it is companies which outsource information technology which tend to have their SC strategy which uses logistics process re-engineering and also they would like to design their SC in a sustainable manner (mean value ≈ 4) compared to firms having their own IT (mean value < 3). As information technology can be performed by a different service provider the company can utilize its SC to re-engineer its process and also design a sustainable SC. We can also think that company when deciding to outsource their Information Technology takes this opportunity during the change of IT solutions to start the process of re-engineering and re-design their SC in a more sustainable way.

4.2.3 Influence on the use of Information Technology – RQ3

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence the use of Information Technology. Referred to Table 9 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert’s scale by the respondents of the 3 statements regarding to Information technology according to the outsource activities.

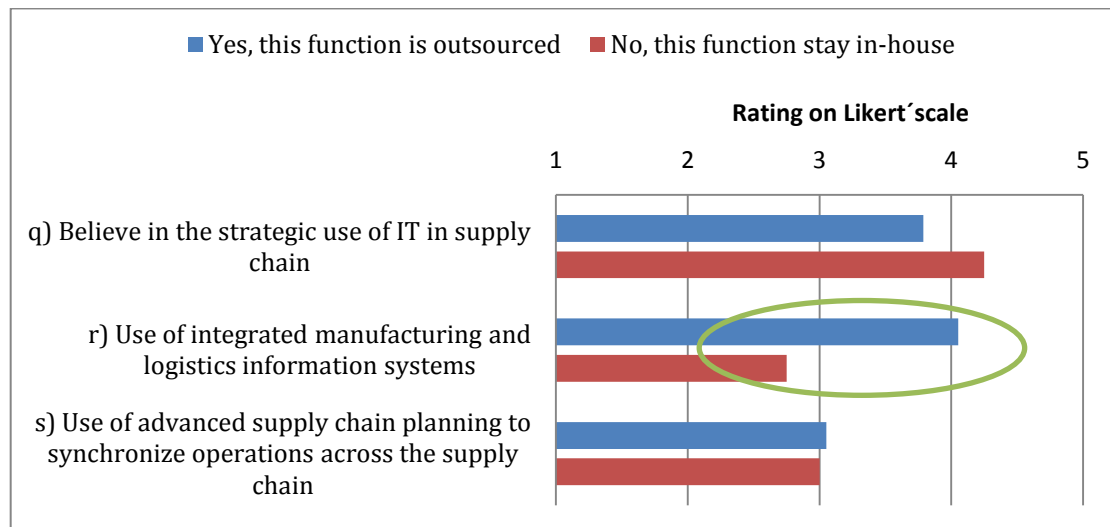


Figure 23 - How outsourced Transportation & Shipment influences utilized Information Technology

Figure 23 representing the influence of outsourcing transportation on IT present a clear difference between companies that outsource Transportation which tend to have more integrated manufacturing and logistics information systems as their SC strategy (mean value ≈ 4) than firms performing transportation (mean value < 3). This can be explained by the fact that companies when outsource transportation also need to have a certain amount of information regarding its shipment etc., hence they tend to have integrated information systems. This is also a service provided by the 3PL provider.

4.2.4 Influence on the Partnership across the supply chain – RQ4

This section describes the significant results obtained on the logistics outsourcing functions from the survey which may influence partnership across the SC. Referred to Table 9 of ANOVA results, we have developed the graphs below. The following graphs represent the rating on the Likert's scale by the respondents of the 3 statements regarding to partnership along the SC actors according to the outsource activities.

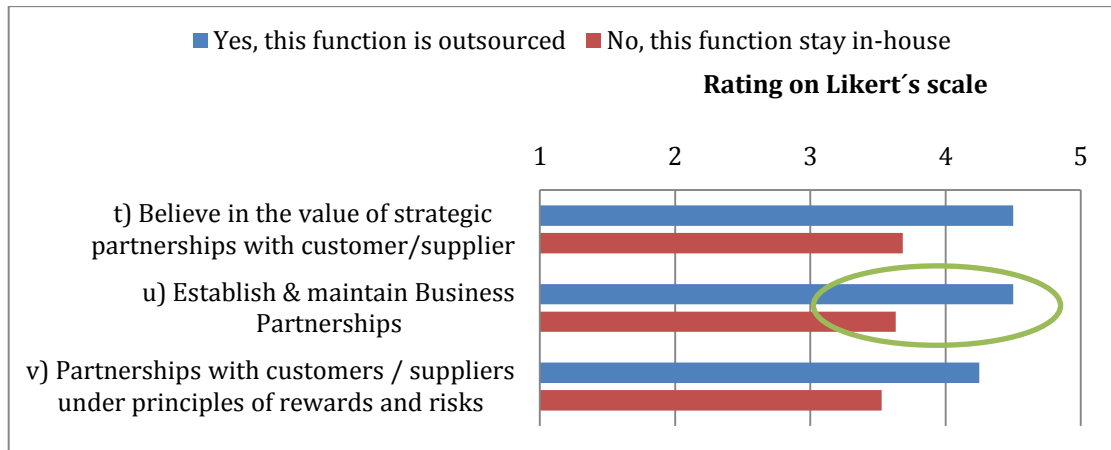


Figure 24 - How outsourced Order Processing influences Partnership across the SC

Based on Figure 24 and the Anova factor at 0,028 for the statement u, we can say that outsourcing of order processing by companies tend to have more its SC partnership strategy to establish and maintain business relations (mean value \approx 4.5) compared to organization that do not outsource order processing (mean value $<$ 4). As order processing is a way in which companies can gather a lot of information regarding the requirements and customer specifications, SC partnership is a consistent choice.

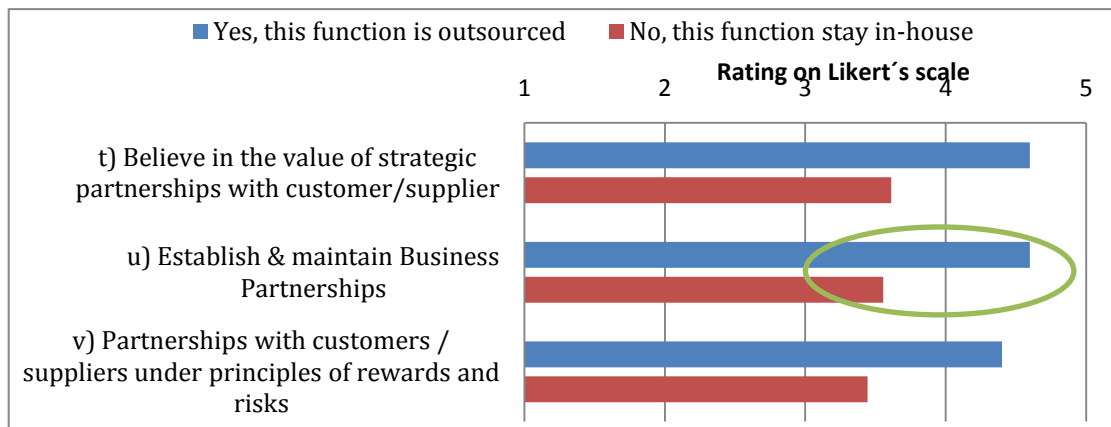


Figure 25 - How outsourced Inventory Control influences Partnership across the SC

Figure 25 presents the influence of outsourcing inventory control on partnership across the SC. The Anova factor at 0,002 on the statement u, show the same result that above on Figure 25 that companies outsourcing inventory control tend to give more important on having and maintaining business relationship with partners along the SC (mean value ≈ 4.5). It is known that this SC partnership between companies is vitally important to have an effective flow of information and exchange of profits. Inventory control is a task which demands partnership in SC this is also the reason companies choose to have a partnership across the SC.

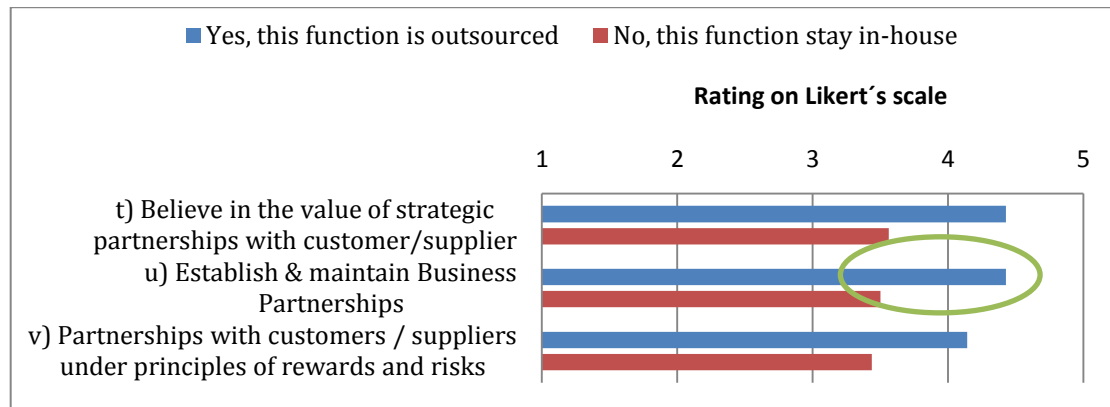


Figure 26 - How outsourced Product Return & Reverse Logistics influences Partnership across the SC

As seen in Figure 24 and 25, Figure 26 draws a similar result. This Figure 26 presents the influence of outsourcing Product return and Reverse logistics on partnership. Companies outsourcing product return and reverse logistics tend to consider more important to have and maintain business partnership (mean value ≈ 4.5) than companies taking care of products return. This explains again the necessity of partnership in the success of outsourcing. As the process of performing reverse logistics is quite complex and involve a lot of different activities, to maintain a SC partnership along the companies becomes a necessity.

To conclude, partnership seems to be more important for French companies that outsource order processing, inventory control and product returns than firms keeping these functions in-house.

5 Discussion & Conclusion

In this section, we will have a discussion regarding the results that we obtained and analysis that was carried out with the help of ANOVA; this is divided in to five parts, discussion on results, methods, conclusion, implications and future work.

5.1 Discussion on Results

To discuss the results obtained from the survey; we have provided the following discussions based on the research questions formulated:

1. How may logistics outsourcing influence Management Orientation in Supply Chain Management?

Companies that outsource logistics functions like warehousing, inventory control, product returns and order processing tend to focus on having an efficient SC and managing the whole SC (shift from local to global). Hence comparing to companies that do not outsource these functions signifies an influence on management orientation.

2. How may logistics outsourcing influence Utilized Strategies in Supply Chain Management?

Companies that tend to outsource logistics functions like inventory control, Information technology and reverse logistics tend to focus on having strategies which are sustainable in nature; time based and re-engineering of SC is possible. Hence comparing to companies that do not outsource these functions signifies an influence on utilized strategies.

3. How may logistics outsourcing influence Utilized Information Technology in Supply Chain Management?

Companies that tend to outsource logistics functions like transportation and product assembly tend to have an integrated manufacturing and logistics IT systems. Hence comparing to companies that do not outsource these functions signifies an influence on utilized strategies.

4. How may logistics outsourcing influence Partnerships (Relationships) in Supply Chain Management?

Companies that tend to outsource logistics functions like product assembly, inventory control and reverse logistics tend to have a business partnership and also maintain the partnership with its customers/suppliers (who operate under risk/reward). Hence comparing to companies that do not outsource these functions signifies an influence on partnerships (relationships).

5.2 Discussion on implications

According to the two graphs as shown below and analysis we have carried out we can observe there exists a similar trend of outsourcing logistics functions by companies in Sweden and France. The trends here signify that transportation and custom brokerage are the two main activities which are outsourced and the outsourcing trend for transportation is 80% and for custom brokerage is about 60%. This result also confirms the similar findings from Hilletoft (2010). We can conclude here that outsourcing of these two functions has an influence on SCM and its strategy.

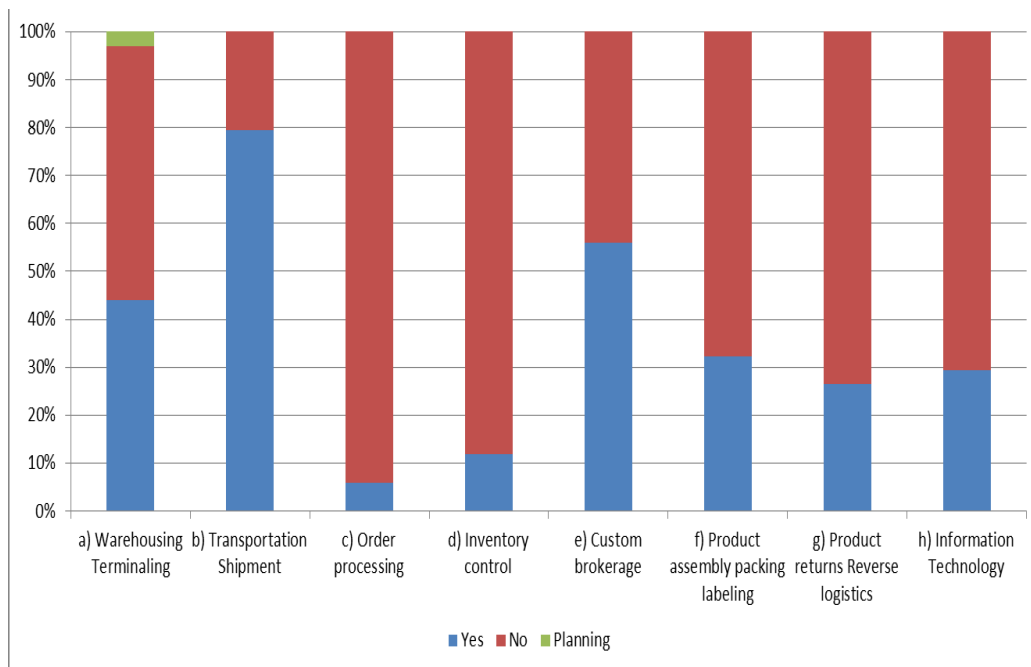


Figure 27 - Percentage of respondent that outsourced or not, the listed logistics functions on the population in Sweden

The analysis also revealed that activities such as warehousing (45%), product assembly (30%), reverse logistics (30%) and information technology (30%) also have an influence on SCM and its strategy. The conclusions from the research paper by Hilletoft (2010) also indicate a similar trend for warehousing and information technology. The interesting part of the findings here are that as the growth of information technology and the need for sustainability are arising with globalization so is the increased outsourcing of activities like product assembly, reverse logistics and information technology.

Also, we can observe from the graphs above that the activities like order processing and inventory control are outsourced at a very minimal scale about just 15%. Concluding we can add that further research on this topic can be carried out by increasing the sample population and also the response rate to have more significant data.

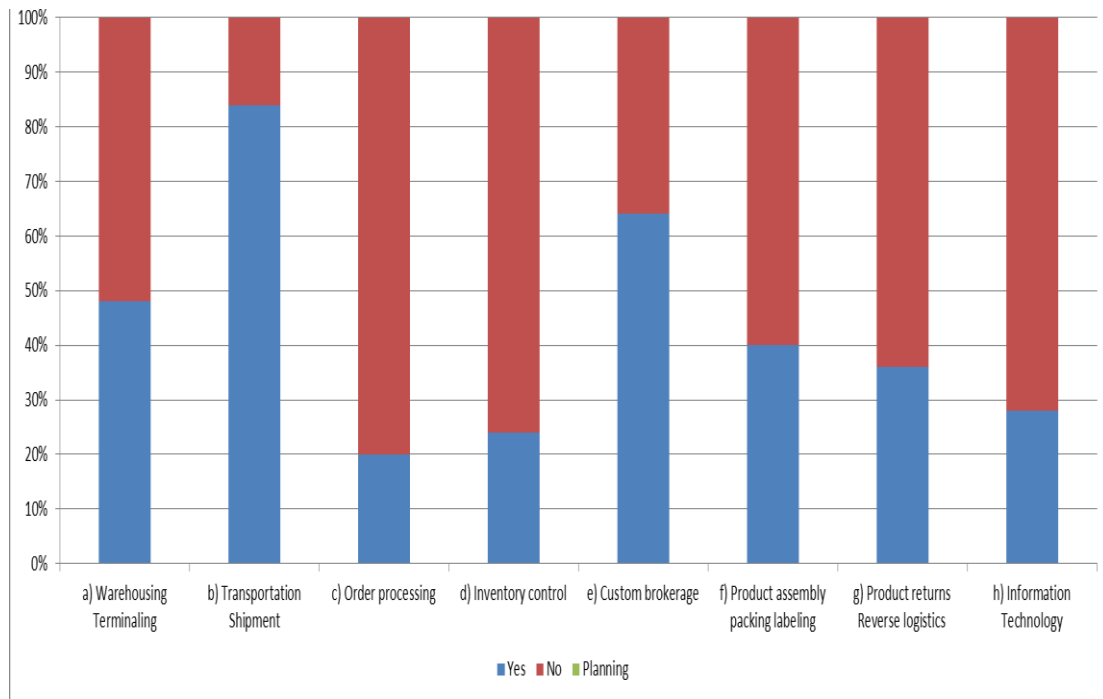


Figure 28 - Percentage of respondent that outsourced or not, the listed logistics functions on the population in France

An interesting point on our result is the correlation between Sweden and France on reverse logistics and order processing. Even though the data sample in terms of a number of companies which we have for Sweden and France are not similar and also the rate of response is very different, it can be observed the following remarks:

- **Reverse logistics:** Our analysis has shown that outsourcing of reverse logistics by companies has an influence on its SCM and its strategy. The influence that we have observed is outsourcing of this function leads to shifting of company's management emphasis from managing local to global operations. Hence to summarize the similarity between Sweden and France we can say that if companies outsource reverse logistics it influences the management orientation of the SC by shifting its focus from local to global operations.
- **Order processing:** Our analysis has shown that outsourcing of order processing by companies has an influence on its SCM and its partnership. The influence that we have observed is outsourcing of this particular function leads to companies planning and development for a plan to establish and maintain business partnerships. To summarize the similar results from two countries we can say that outsourcing of order processing has an influence on companies SCM and its partnership, and the focus is more on development and maintaining business partnerships.

5.3 Discussion on Method

The methodology that was carried out during this was in two parts one being the literature review and the other being the survey. The literature as described in the theoretical background section enabled us to develop the research questions and further to develop a theoretical framework. This framework also contained the four research questions on which our initial hypothesis was based on.

Discussion on literature

The literature here was divided in to two main domains they are outsourced logistics functions and SCM at a strategic level. We have also noticed that the existing literature on each specific domain is in abundance, but the literature which tries to see the potential influence of one over the other remains scarce. The research based on Hilletofth (2010) also suggests and confirms this statement. The literature review also suggests that there exist a lot of literatures which talk about each outsourced logistics function or SCM at different levels as a single entity. But a general view connecting these two domains remains missing to a certain extent.

In the section of theoretical background, we believe it is necessary to provide relevant information to signify the purpose of this thesis. We have provided an introduction to these two domains, with relevant existing frameworks. Based on this we have developed our framework which was the backbone in designing the survey and preparing the questioner.

Discussion on survey

There are various methods by which the data for this can be obtained as discussed in the methodology section, but as the thesis demands knowledge from the industrial sector to prove the hypothesis formulated, the survey was the best available methodology to collect the data. As this web based survey is efficient in reaching the right personnel in the industrial world and also the time needed to obtain data was in the limits, we can say this was a successful methodology.

The tool used to carry out this survey was known as survey monkey, this tool enabled us to implement the questioner that was developed with the help of the theoretical framework. The ease of answering and collecting the answered survey was also one of the reasons to choose this web based tool.

The survey was provided to the respondents in three different languages, to overcome the barrier of language based on region. The survey design in four different parts also helped the respondents to answer methodically. The respondents had about 30 days to answer the survey; also we had sent the reminders following the initial call for answers, and here we believe that more reminders following this could have improved the response rate. We also targeted the logistics based personnel to answer the survey as they have the required experience and knowledge.

After conducting this survey, we can talk about some disadvantages of this method. In fact, it is quite difficult to reach the correct person due to the specificity of the study, and we believe that the culture of each country play a role in the response rate from survey method. To illustrate this remark, we have also conducted the survey in Finland but received very poor number of answer. This can be explained by the important language barrier to build the survey and to collect email address in Finland. That is why we think that analyse of the culture of the targeted country for a survey is important to be done upstream.

5.4 Conclusions

Our results have shown a similar trend in Sweden and France on the outsourced logistics activities; mainly transportation and custom brokerage respectively at 80% and 60% are outsourced. According to the responses obtained from the survey, these activities tend to influence SCM and its strategy.

As for example in Sweden, outsourcing transportation tends to initiate a need of organizational collaboration for an effective SC. The following functions such as warehousing, inventory control, order processing, product assembly, reverse logistics and information technology are less outsourced.

However we noticed an increase in their use and importance on SCM. This can be explained by the recent and significant developments in the field of IT, as well as the growing importance of sustainability for firms. For example for Swedish organizations, outsourcing order processing seems to lead to a focus on responsive SC, to use of postponement strategies and an importance in collaboration across the SC. Results are different for companies in France as the main influence of outsourcing logistics activities is more on seen the SC as a whole with a great importance in partnership and an interest in standardization of method and re-engineering the SC as well as in a sustainable way.

5.5 Future research

To carry out further research in this area, it can be really interesting to collect the data by conducting interviews form professionals within the area of logistics and SCM. As the data we have obtained is in generic terms, and it has allowed us to answer the hypothesis that outsourcing of logistics indeed has an influence on companies SCM and its strategies. Deeper analysis with interviews could reveal new insights in to this research area. Also by repeating the survey by increasing the sample population and also targeting the logistics professionals can be interesting.



Figure 29 - Idea of framework for further research

Also, based on the current analysis of this thesis we have come up with a model as shown above (Figure 29) which talks about how management orientation, strategy, information technology and partnership are related to each other. The goal is derived from management's orientation, and this creates the need to achieve the goal which is the target of strategy. To achieve this strategy the usage of information technology arises which provides opportunities for different companies to have partnerships between their existing SCs. We believe the analysis of the above model can be a scope for further research in the area of logistics outsourcing and SCM.

6 References

- Andersson, D., Dreyer, H.C., Halldórsson, Á., Jahre, M., Ojala, L., Skjoett-Larsen, T. And Virum, H. (2003), “*Third Party Logistics – A Nordic Research Approach.*” Turku: Kirjapaino Grafia Oy.
- Bolumole, Y.A., Frankel, R., Naslund, D. (2007), ”Developing a Theoretical Framework for Logistics Outsourcing”, *American Society of Transportation and Logistics*, Vol. 46 Source Issue. 2.
- Bose, I., and Pal, R., (2005), “Auto-ID: Managing Anything, Anywhere, Anytime in the supply chain”, *Communications of the ACM*, Vol.48, No. 8.
- Carter, C.R. & Easton, P.L. (2011), Sustainable supply chain management: evolution and future directions, *International Journal of Physical Distribution & Logistics Management*, Vol. 41 No. 1, pp. 46-62
- Carifio, J. & Perla, R. (2007). Ten Common Misunderstandings, Misconceptions, Persistent Myths and Urban Legends about Likert Scales and Likert Response Formats and their Antidotes. *Journal of Social Sciences*, 2, 106-116. Available at <http://www.scipub.org/fulltext/jss/jss33106-116.pdf>
- Carter, C.R. and Rogers, D.S. (2008), “A framework of sustainable supply chain management: moving toward new theory”, *International Journal of Physical Distribution & Logistics Management*, Vol. 38 No. 5, pp. 360-87.
- Cheng, Y-H. and Lee, F. (2010), “Outsourcing reverse logistics of high-tech manufacturing firms by using a systemic decision-making approach: TFT-LCD sector in Taiwan”, Vol..39, Issue 7, pp. 1111-1119.
- Chopra, S., and Meindl, P., (2010), *Supply chain management: Strategy, planning and operations*, Pearson, Upper Saddle River, NJ.
- Christopher, M., Lawson, R. and Peck, H. (2004), “Creating agile supply chains in the fashion industry”, *International Journal of Retail and Distribution Management*, Vol. 32 No.8, pp. 367-76.
- Christopher, M.C., Peck, H. and Towill, D.R., (2006), “A taxonomy for selecting global supply chain strategies”, *International Journal of Logistics Management*, Vol. 17, No. 2, pp. 277-87.
- CSCMP (2010), available at <http://cscmp.org/digital/glossary/glossary.asp> (accessed February 06, 2012).
- Fisher, M.L., (1997), “What is the right supply chain for your product?”, *Harvard Business Review*, Vol. 75, No. 2, pp. 105-16.

- Ghauri, P. and Gronhaug, J., (2010), *Research Methods in Business Studies*, (4th ed.), Pearson, Dorset Press Dorchester, Great Britain.
- Gibson, B., Mentzer, J., and Cook, R., (2005), "Supply chain management: The pursuit of a consensus definition", *Journal of Business Logistics*, 26(2), 17-25.
- Harrison, A. & Van Hoek, R., (2011), "Logistics Management & Strategy – Competing Through the Supply Chain", Pearson Education Limited, England.
- Hertz, S., and Alfredsson, M., (2003), "Strategic development of third party logistics providers", *Industrial Marketing Management*, Vol. 32, pp. 139-149.
- Hill, B. (2000), *Manufacturing Strategy*, 2nd edition, London: Macmillan.
- Hilletoft, P. and Hilmola, O.-P. (2010), "Role of logistics outsourcing on supply chain strategy and management, survey findings from Northern Europe", *Strategic Outsourcing: An International Journal*, Vol. 3 No. 1, pp. 46-61.
- Hilletoft, P., (2008), "How to develop a differentiated supply chain strategy", *Industrial Management & Data Systems*, Vol. 109, No. 1, pp. 16-33.
- Hilletoft, P., (2010), *Demand-Supply chain management*, Chalmers Reproservice, Göteborg Sweden, p.47.
- Jäger, K., Hilletoft, P. and Ujvari, S. (2009) 'From standard 3PL provider to service developer: a case study from the Swedish furniture industry', *World Review of Intermodal Transportation Research*, Vol. 2, No. 4, pp.376–390.
- Juntunen, J., Grant, D.B. and Jari, J. (2010), "Short-run versus long-run trade-offs in outsourcing relationships: impacts on loyalty and switching propensity", *Strategic Outsourcing: An International Journal*, Vol. 3 No. 3.
- Kovacs, G., and Spens, K., (2005), "Abductive reasoning in logistics research", *International Journal of Physical Distribution and Logistics Management*, 35(2), 132-144.
- Lalwani, C.S., Pawar, K.S. & Shah, J., (2007), "Contextualisation framework for the manufacturing supply chain", published by the Centre for Concurrent Enterprise, University of Nottingham Business School, Nottingham, UK.
- Larson, P. & Halldorsson, A. (2004), Logistics versus supply chain management: an international survey, *International Journal of Logistics: Research and Applications*, 7(1), 17-31.
- Lieb, R.C. (1992), "The use of third-party logistics services by large American manufacturers", *Journal of Business Logistics*, Vol. 13 No. 2, pp. 29-42.

- Lo, S.M. & Power, D., (2010), “An empirical investigation of the relationship between product nature and supply chain strategy”, *Supply Chain Management: An International Journal*, Vol. 15, No. 2, pp. 139-153.
- Malhotra, M. K. and V. Grover (1998), “An assessment of survey research in POM: From constructs to theory”, *Journal of operations management*, Vol.16.
- Mangan, J., Lalwani, C., Butcher, T. And Javadpour R., (2012), “Global Logistics & Supply Chain Management”, John Wiley & Sons, Ltd, 2nd Edition.
- Mentzer, J., and Kahn, K., (1995), “A framework of logistics research”, *Journal of business Logistics*, 16(1), 231-250.
- Mesnard, X., et Dupont, A. (1999), *Votre logistique est-elle à la pointe ?*, L'Expansion Management Review, n° 94, pp. 52-58.
- Pandit, P. (2005), “Quality of customer service in outsourcing, unpublished dissertation”, Nottingham University Business School: Operations Management Division, Nottingham, UK.
- Parashkevova, L., (2007), “Logistics outsourcing – A means of assuring the competitive advantage for an organization”, *Vadyba Management*, Vol.15, Nr.2
- Pinsonneault, A. and K. Kraemer (1993), “Survey research methodology in management information systems: An assessment”, *Journal of Management Information Systems*, Vol. 10 No. 2, pp. 75-105.
- Power, D., Sharafali, M., and Bhakoo, V., (2007), “Adding value through outsourcing: Contributions of 3PL services to customer performance”, *Management Research News*, 30(3), 228-235
- Razzaque, M.A. and Sheng, C.C., (1998), "Outsourcing of logistics functions: a literature survey", *International Journal of Physical Distribution & Logistics Management*, Vol. 28 Iss: 2 pp. 89 – 107
- Sadler, I., (2007), “Logistics and Supply Chain Integration”, SAGE Publications Ltd, UK, First Edition.
- Sahay, B.S. and Mohan, R., (2006). “3PL practices: An Indian perspective.” *International Journal of Physical Distribution & Logistics Management* 36 (9), 666–689.
- Sherer, S.A., (2005), "From supply-chain management to value network advocacy: implications for e-supply chains", *Supply Chain Management: An International Journal*, Vol. 10 Iss: 2 pp. 77 - 83
- Solakivi, T., Töyli, J., Engblom, J., and Ojala, L. (2011), “Logistics outsourcing and company performance of SMEs: Evidence from 223 firms operating in

- Finland”, *Strategic Outsourcing: An International Journal*, Vol. 4 No. 2, pp. 131-151.
- Stadtler, H., (2004), “Supply chain management and advanced planning – basics, overview and challenges”, *European Journal of Operational Research*, 163(2005), 575-588.
- Stock, J.R. & Boyer, S.L., (2009), “Developing a consensus definition of supply chain management: a qualitative study”, *International Journal of Physical Distribution & Logistics Management*, Vol. 39, No. 8, pp. 690-711
- Whittington, R. (2000), *What is Strategy and Does it Matter?*, London: International Thomson Business Press.
- Williamson, K. (2002). *Research Methods for Students, Academics and Professionals*, 2nd ed., Centre for Information Studies, Wagga wagga, NSW.
- Wu, F., Yenyurt, S., Kim, D. & Cavusgil, S.T., (2006), The impact of information technology on supply chain capabilities and firm performance: A resource-based view, *Industrial Marketing Management*, 35, pp. 493 – 504.
- Zachariassen, F., and Arlbjørn, J.S. (2010), “Doctoral dissertations in logistics and supply chain management, A review of Nordic contributions from 2002 to 2008”, *International Journal of Physical Distribution & Logistics Management*, Vol. 40 No. 4, pp. 332-352.

7 Appendix

The appendix contains the documents used to carry out this Master thesis research, as the contact letter send to companies in English, Swedish and French, the design questionnaire implemented on "Survey monkey" in the three mentioned languages.

Contact Letter in English:

Dear Logistics/Supply Chain Director,

In the research side, we are at the moment interested in the impact of logistics outsourcing on supply chain management from a strategic perspective. It is evident that the supply chain and its management, is of highest importance in most industries. In addition, companies tend to specialize in those activities that they regard as their core competences and outsource the rest to third parties in order to stay competitive. However, not much is known on how logistics outsourcing impact the strategies and direction in supply chain management. Thus we have decided to conduct an online survey in this field and invite you to participate. The survey is part of a research project conducted at Jönköping University in Sweden. It consists of 16 questions divided into four sections. It will take approximately 10 to 15 minutes to complete. You may answer to the questionnaire with the following form:

Link in English:

Each answer is highly valuable to us as it allows us to improve the knowledge in this research field. We apply strict **confidentiality** for all of the answers, and assure that in every research publication a single company cannot be identified from analyses, since all of the analyses are completed in a manner that one company belongs to a larger group of observations (e.g. industrial area and revenue class). As a response gift we give you an opportunity to receive research report from this survey; this should indeed give considerable aid in the development of future supply chain strategies for your company.

If you have any further questions or concerns, please do not hesitate to contact us.

Kind regards,
Jean-Baptiste Brat
Rajath Raghu
Thesis Supervisor - Per Hilletoft

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#####

Contact Letter in Swedish:

Till Logistikansvarig,

Inom vår forskning, är vi för närvarande intresserade av vilka konsekvenser outsourcing av logistikfunktioner får på ledningen av försörjningskedjan. Det är tydligt att försörjningskedjan och dess ledning är av största betydelse inom de flesta branscher. Vidare tenderar företag att specialisera sig på de funktioner som de anser tillhöra sin kärnkompetens och outsourca resten till extern part. Det är dock inte mycket känt kring hur outsourcing av logistiken påverkar strategier och inriktning för ledningen av försörjningskedjan. Med anledning av detta har vi bestämt oss för att genomföra en webbenkät inom detta område och inbjuder här med dig till att delta. Enkäten är en del av ett forskningsprojekt som bedrivs på Tekniska Högskolan i Jönköping. Den består av 16 frågor uppdelade i fyra delar och tar uppskattningsvis 10 till 15 minuter att besvara. Om detta är intressant så är vi mycket tacksamma om du fyller i enkäten på följande länk:

Länk på svenska:

Alla svar är av största betydelse då de kommer att möjliggöra för oss att öka kunskapen inom detta forskningsområde. Svaren som lämnas behandlas strikt **konfidentiellt** och vi garanterar att det inte går att särskilja data från ett enskilt företag i någon av de publikationer som baseras på enkätsvaren. Alla analyser från enkätsvaren genomförs så att enskilda företag alltid ingår i större datamängder (exempelvis marknadsområde eller omsättning). Som tack för din insats erbjuder vi forskningsrapporten som enkätsvaren kommer resultera i. Den här kan visa sig mycket givande vid utvecklingen av ert företags framtida logistikstrategi.

Om ni har några ytterligare frågor, vänligen kontakta oss.

Med vänliga hälsningar,
Jean-Baptiste Brat
Rajath Raghu
Handledare - Per Hilletoft

Contact letter in French:

Cher/Chère Logisticien(ne) / Directeur(trice) de la chaîne logistique,
Dans notre recherche scientifique, nous sommes à l'heure actuelle intéressé par l'analyse de l'impact de l'externalisation de la logistique (sous-traitance) sur le management de la chaîne logistique dans une perspective stratégique. Il est évident que la chaîne d'approvisionnement et sa gestion, est de la plus haute importance dans la plupart des industries. De plus, les entreprises ont tendance à se spécialiser dans les activités qu'ils considèrent comme leurs compétences principales et à externaliser le reste à des tiers afin de rester compétitif. Cependant, pas beaucoup est connu sur la façon dont l'externalisation de la logistique influence les stratégies et l'orientation en matière de gestion de la chaîne d'approvisionnement. Ainsi, nous avons décidé de mener une enquête en ligne dans ce domaine et nous vous invitons à participer. L'enquête fait partie d'un projet de recherche mené à l'Université de Jönköping en **Suède**. Il se compose de 16 questions réparties en quatre sections. Il vous faudra environ 10 à 15 minutes pour compléter le formulaire. Vous pouvez y répondre en utilisant les liens ci-dessous:

Lien pour répondre au questionnaire en Français :

Lien pour répondre au questionnaire en Anglais :

Chaque réponse est très précieuse pour nous car elle nous permettra d'améliorer les connaissances dans ce domaine de recherche. Nous appliquons une stricte **confidentialité** pour l'ensemble des réponses collectées, et assurons dans toutes les publications de recherche, qu'aucune entreprise ne pourra être identifiée à partir des analyses, puisque toutes les analyses sont effectuées de manière à ce que chaque entreprise appartienne à un groupe plus large d'observations (par exemple : une région industrielle ou la tranche du chiffre d'affaire). En tant que participant, vous avez la possibilité de recevoir le rapport de recherche de cette enquête, ce qui peut être intéressant pour vous apporter des idées dans le développement de futures stratégies de votre chaîne logistique.

Si vous avez des questions, n'hésitez pas à nous contacter. Veuillez agréer, Madame, Monsieur, l'expression de nos sentiments distingués.

Cordialement,

Jean-Baptiste Brat

Rajath Raghu

Theis supervisor Per Hilletoft

Survey in English:

**THE IMPACT OF LOGISTICS OUTSOURCING ON
SUPPLY CHAIN MANAGEMENT**

PART A: ORGANIZATIONAL INFORMATION

1. What is the name of your company? (optional) _____
2. What is the location of your company? _____
3. What is your position in the company?
 1. Director / CEO / Vice President
 2. Purchasing Manager
 3. Supply Chain Manager
 4. Quality Manager
 5. Project Manager
 6. Others please specify: _____
4. What kind of business does your company run?
 1. Manufacturing
 2. Trade
 3. Logistics
 4. Others please specify: _____
5. How many products does your company produce?
 1. < 10
 2. 10-99
 3. 100-500
 4. > 500
6. What is the nature of your company's products?
 1. Consumer products
 2. Industrial products and Equipment's
 3. Services
 4. Others please specify: _____

7. How many suppliers does your company have?

- 1. < 5
- 2. 5-19
- 3. 20-99
- 4. > 100

8. How many employees does your company have?

- 1. < 10
- 2. 10-99
- 3. 100-500
- 4. > 500

9. What is the annual turnover of your company?

- 1. < €100,000
- 2. €100,000-€1,000,000
- 3. €1,000,000-€10,000,000
- 4. > €10,000,000

10. What is the supply chain position of your company?

- 1. Upstream (closer to raw material)
- 2. Midstream
- 3. Downstream (closer to consumers)

11. What kind of manufacturing process does your company use? (if applicable)

- 1. Job shop
- 2. Batch
- 3. Repetitive assembly
- 4. Continuous flow

12. What kind of manufacturing strategy does your company employ? (if applicable)

- 1. Make to stock
- 2. Make to order
- 3. Assembly to order
- 4. Engineer to order

PART B: LOGISTICS OUTSOURCING

13. Which of the following functions does your company outsource?

	Yes (1)	No (2)	Planning (3)	
a) Warehousing/Terminaling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
b) Transportation/Shipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
c) Order processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
d) Inventory control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
e) Custom brokerage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
f) Product assembly/packing/labeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
g) Product returns/Reverse logistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
h) Information Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010

PART C: STRATEGIES AND DIRECTION IN SCM

14. To what extent do you agree/disagree with the following statements? (Scale: 1=strongly disagree; 2=disagree; 3=neither; 4=agree; 5=strongly agree).

	(1)	(2)	(3)	(4)	(5)	
a) Management emphasis has shifted from managing separate logistics functions to managing whole supply chain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	(Hilletofth and Hilmola, 2010)
b) Management emphasis has shifted from managing local to global supply chain operations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
c) Management emphasis has shifted from managing production capacity to satisfying customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
d) My company considers organizational collaboration a need for effective supply chain management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
e) Management emphasis is more on having an efficient supply chain rather than a responsive supply chain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
f) My company considers logistics performance as a cornerstone for our competitiveness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
g) My company considers logistics as one of the core strengths.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
h) My company extensively measures logistics performance in terms of cost, productivity, customer service, asset management and quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
i) My company stays involved in the strategic management of the outsourced logistics functions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
j) My company has common agreed-to strategies to standardize logistics operations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010
k) My company has common agreed-to strategies to differentiate logistics operations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Brat and Raghu, 2012
l) My company utilizes strategies to postpone movement and final product configuration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hilletofth and Hilmola, 2010

m) My company utilizes strategies for time-based logistics including continuous replenishment, quick response and just-in-time with customers / suppliers.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
n) My company utilizes strategies for logistics process re-engineering.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
o) My company has strategies in place to facilitate reverse logistics.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
p) My company designs the supply chain in a sustainable way, as performing well economically, socially and environmentally.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Brat and Raghu, 2012
q) My company believes in the strategic values of using IT in our supply chain.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
r) My company utilizes integrated manufacturing and logistics information systems.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
s) My company utilizes advanced supply chain planning tools to synchronize operations across the supply chain.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Brat and Raghu, 2012
t) My company believes in the value of strategic partnerships with key customers / suppliers.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Brat and Raghu, 2012
u) My company has developed and is pursuing a plan to establish and maintain business partnerships.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010
v) My company has partnerships with customers / suppliers who operate under principles of rewards and risks.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Hilletofth and Hilmola, 2010

PART D: COMMUNICATION OF RESULTS AND FURTHER COLLABORATION

15. Would you like to have the final report sent to you?

- 1. Yes
- 2. No

16. Would your company be interested in participating in a case study with regard to the field of the survey?

- 1. Yes
- 2. No

Thank you for taking the time to answer this survey, we are grateful for your answer